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ABSTRACT

This is a cost effectiveness study accompanied by recommendations on legal, fiscal, and procedural steps to be taken should the constitutional amendment removing restriction of state assistance to independent colleges be approved by the legislature. Examination is made of the educational marketplace, arrangements of other states in similar programs, cost analysis components, and fiscal alternatives for financing private higher education. Methodology for collecting data consisted of interviewing persons with expertise, reading articles, making decisions, and using applied economics. The authors conclude that more information is needed on student requirements, educational institutions, population trends, data availability, and coordination of many phases of research and information. Only then can a competent evaluation be made for future policy prediction. (NF)

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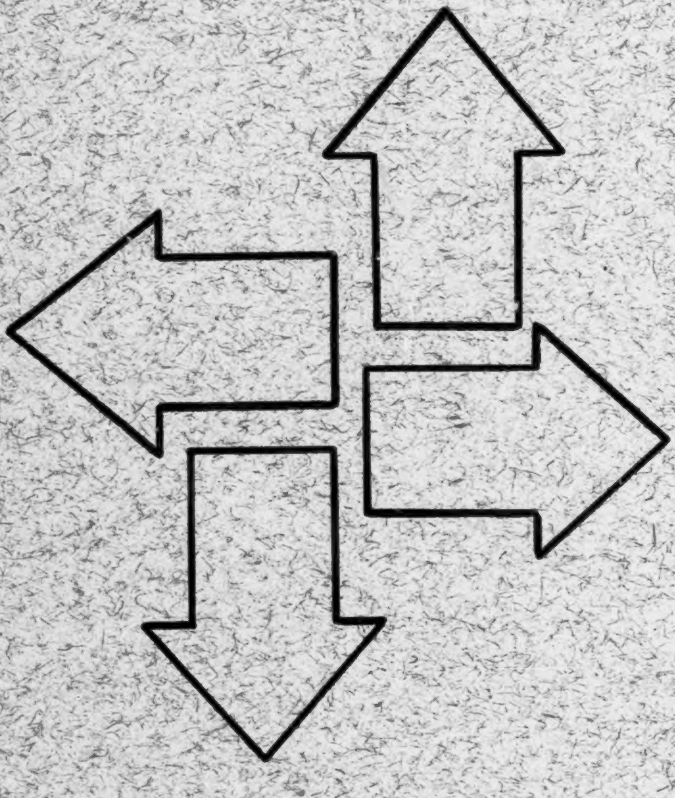
ALTERNATIVE METHODS OF STATE SUPPORT FOR INDEPENDENT HIGHER EDUCATION IN CALIFORNIA



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Phase III of a Study of State Aid to Private Higher Education

Coordinating Council for Higher Education February 1970

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PREFACE

At the end of September 1969 the Coordinating Council for Higher Education of the State of California requested from the authors, a study on the feasibility of providing public support for private higher education in California. The study was to begin on October 1, 1969 and terminate with a final report on January 1, 1970. While the general nature of the topic suggested many creative possibilities in fulfilling the assignment, two rather severe constraints were prominent. The greatest limitation was the urgency of the study. In any complex undertaking, time is a great ally in clarifying and analyzing the problem. A thirteen week schedule was exceedingly short for a study of this complexity. A second boundary was provided by the dearth of data, information, and ongoing research on the economics and financing of higher education. The authors of a quick study do not have the luxury of carrying out surveys or extensive basic research. Rather, they must build upon existing data and knowledge. Sad to say the economics and financing of higher education include many virgin stands of unsurveyed forests, and much of the needed foundation for our study did not exist.

Within these stringent confines we scurried about interviewing knowledgeable persons, reading articles, collecting data, and applying our knowledge of economics to financial decision-making for higher education. What follows is not the final word on the subject. We trust, however, that it will be useful in focusing on the alternatives before the State in providing public assistance to private higher education. That is, we feel that the ninety days between the inception of this activity and the final report enabled us to make substantial inroads into helping the State choose a course of action.

We are grateful to many persons for their guidance and advice in the course of this study. In particular, we wish to thank Michael Kirst, Fred Nelson, John Keller, Joseph McCloskey, Morgan Odell, Willard Spalding, and Horace Crandell for their counsel. We are also indebted to Valerie Nelson, Elizabeth Mayer, Helene Wilson, and Guilbert Hentschke for their capable research assistance. Of course, it should be added that the co-authors, alone, take responsibility for the views and analyses contained in this report.

Henry M. Levin

Jack W. Osman

January 1, 1970

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Chapter 1 INTRODUCTION

PURPOSE OF STUDY

This report represents one part of a set of studies carried out by the Coordinating Council for Higher Education (CCHE) of the State of California. In August, 1969, the California State Department of Finance requested the CCHE to undertake

> .....a cost analysis study of private higher education in California with a view toward more effectively utilizing the total public and private higher education systems.1/

The third and final phase of the endeavor was viewed as:

> A cost effectiveness study accompanied by recommendations on legal, fiscal, and procedural steps to be taken should the constitutional amendment removing restriction of State assistance to independent colleges, proposed by the Constitution Revision Commission, be approved by the Legislature.

It is the third phase of the CCHE inquiry to which this report is devoted.

While a general charge has many advantages in that it permits a large variety of alternative research strategies, it has the disadvantage of lacking a focus. In particular, the general wording of the request for phase three lacks a specific policy orientation. For example, one must know which are the principal goals that the State is concerned with before examining the costs and effects of different potential strategies. The CCHE provided that focus by raising three questions that this effort might address:

(1) How can public funds be used to stimulate increases in enrollment at private colleges and universities at less cost per enrollee to the State than that incurred in public institutions?

(2) Can the private sector maintain its share of enrollment without public funds?

1/ Memo from Caspar W. Weinberger, Director of Finance to Willard B. Spalding, Deputy Director of CCHE, August 22, 1969.

(3) What are the fiscal alternatives for public support of private colleges and universities in California?

These questions were to be used as guidelines in pursuing this study; but it was understood that other important questions that arose during the course of the activity should also be addressed. That is, in large measure the direction of the study was to be determined by examining the issues raised by the initial questions. But the availability of data, and subsequent analysis were certain to have an important influence in molding the report.

Financial Condition of California's Independent Colleges and Universities

Given the fact that this study is part of an extensive exploration on the feasibility of providing State assistance to private higher education, its concentration on enrollments, alone, differs markedly from similar studies carried out by other states. Most of the other states that have examined the possibility of public support for independent colleges and universities have done so because many of their independent institutions were in perilous financial condition.2/ It was considered that the demise or the loss of vigor of the independent institutions would not only place a greater burden on the public institutions of those states, but would also diminish the diversity among colleges and universities.

Moreover, a moral consideration has also motivated the movement to prevent financial disaster among the independent colleges and universities in other states. In those states, the independent institutions traditionally served a public function where the public higher educational system was inadequate for the task. The type of educational services and the nature of the student enrollment indicated that their role was one which would ordinarily be carried out by the public colleges and universities if the latter had a greater capacity. In recent years though, the rapid expansion of the public institutions has eroded the enrollment base of the independent institutions. Predictably, many students have chosen the lower cost public higher educational alternative as spaces became available in those institutions.

2/ See, for example, Strengthening Private Higher Education in Illinois, A Report on the State's Role (Springfield, Illinois: Illinois Board of Higher Education, 1969); and New York State and Private Higher Education, Report of the Select Committee on the Future of Private and Independent Higher Education in New York State (Albany, New York: State Education Department, 1968).

The independent institutions, then, have been faced with what they see as an unjust situation. For many years they served the populations whom the public institutions neglected. Now that the states have finally undertaken their responsibilities in this area, they have undermined the finances and vigor of many of the independent institutions by taking away enrollments. The reduced enrollments mean higher costs per student because personnel and physical plant cannot be pruned easily to fit the needs of smaller student bodies. Moreover, the private institutions have been reluctant to raise tuition to keep up with generally rising costs for fear of further reductions in the demands for their services. In a sense, many of the independent colleges and universities view the situation as one in which they are being penalized for having served the State's function at a time when the State was unwilling to accept the responsibilities. Accordingly, some states have recognized this relationship and wish to provide some financial cushioning for the private institutions as the public ones expand.

Yet, there is a strong justification for not addressing this goal in California. First, the financial status of California independent colleges and universities, taken as a group, is not in jeopardy. While the study of the State's independent colleges and universities prepared for the Association of Independent California Colleges and Universities (AICCU) indicated that their future should be watched carefully, little evidence was provided that forecast substantial financial difficulties.3/ The forecast of large deficits in the AICCU report was based primarily on projecting revenues and expenditures. Yet any projection for the future will conjure up huge deficits if the projected expansion of activities is overly-ambitious and the forecast of revenues is overly-conservative. Both of these factors characterize the AICCU study leading the Joint Committee on Higher Education (JCHE) to conclude that:

> In reviewing the information reported in both of the AICCU reports we have come to the conclusion that the foregoing substantially overstates the financial difficulties facing the private institutions.4/

3/ Financing Independent Higher Education in California, by McKinsey and Company, Inc., for the Association of Independent California Colleges and Universities (December, 1968).

4/ The Challenge of Achievement, A Report on Public and Private Higher Education in California to the Joint Committee on Higher Education of the California Legislature (1969), p.95.

To be sure, we are seeing some short run deficits during the 1969-71 period in several of these institutions, due to the precipitous cutbacks of Federal support, particularly research support. Yet, there is every reason to assume that such deficits are temporary ones that will simply require appropriate adjustments by the affected institutions. They are not symptoms of general financial malaise. Indeed, they should be interpreted as short run phenomena consistent with the treatment of an annual surplus, when income exceeds outgo. When the private institutions experience surpluses and accretions to their unrestricted reserves, few observers panic about financial prosperity. On the other hand, when these reserves are called upon to finance periodic deficits, gloomy prognoses are the order of the day.5/

On the other hand, some individual institutions might be beset by more deeply rooted financial troubles. Whether the State should aid an institution must depend on the particular circumstances of the case and the values of the State of California. Is the State obligated to guarantee the existence of every independent institution of higher education regardless of its ability to attract students or its quality? When religious affiliated schools encounter financial difficulties, is it the responsibility of the sponsoring church or the State to maintain viability?

The other major reason that the California situation differs markedly from that of other states is that the rapid expansion of the public system in California was hardly made at the expense of the private one. That is, the State system of higher education was well established and serving a public need at a relatively early stage in the development of California higher education. The State did not usurp the function of the independent colleges and universities.6/ For this reason as well as the aforementioned ones, it is reasonable to review arrangements for financing enrollments in independent colleges and universities in the State without focusing specifically on improving the financial status of this group of institutions.

5/ For all of the years surveyed by the AICCU in its most recent statistical profile of the independent institutions (1957-67), surpluses were reported in every year for the private colleges and universities as a group, see A Statistical Profile of Independent Higher Education in California prepared for the Association of Independent California Colleges and Universities. (August 15, 1968), p. 55.

6/ Indeed the New York State analogy is inappropriate for California despite its use by McKinsey and Company in Financing Higher Education in California.

Emphasis on Enrollment Burden

The view taken here is that when the independent colleges and universities enroll California residents, they are serving a public function by reducing the burden on the public institutions. In particular, it is important to examine ways in which the State might assist the independent institutions of higher education to increase their enrollments of California students, particularly if this task can be accomplished at lower cost to the State than would similar enrollment increases in the State system of higher education. Accordingly, the principal goal of this report is that of examining the various alternatives for public support of California enrollees at private institutions of higher education in California. The discussion is devoted primarily to analyzing the undergraduate enrollments since they typify the general case. In no way does this specific focus preclude applying the analysis to other levels or types of higher education. Rather, the discussion is couched in a framework that can be applied to graduate and professional as well as undergraduate enrollments.

Since the ultimate purpose of this report is to assist the Coordinating Council of Higher Education and the California Legislature to formulate particular financial arrangements, the study has been carried out and the results have been reported in a decision-oriented context. That is, the implications of alternative policies and strategies are pointed out wherever possible. Special emphasis is given to the process by which different alternatives affect enrollments in private institutions of higher education. The reason for doing this is to underline the fact that mechanical arrangements that are not well-understood in relation to their effects on student and institutional behavior may be naive. Rather, the behavioral assumptions for increasing enrollments by the use of alternative strategies should be denoted explicitly along with a description of the plan.

OTHER CONSIDERATIONS FOR FINANCIAL PLANNING

While the focus of this study is on how the State might stimulate increases in enrollment at private colleges and universities at less cost than that required to do so at public institutions, we would be derelict if we did not address briefly the other considerations which should be reviewed in making financial choices. That is, if the State is to attempt to increase the number of enrollees at private institutions relative to that in public ones, we might ask ourselves: "What are the factors other than public cost that should be considered?"

One way of answering that question is to compare the probable impact of public investment in California's private colleges and universities with a comparable investment in the public ones. Five types of social effects might be scrutinized: (1) democratic benefits, (2) spillovers in knowledge and technology, (3) flexibility and diversity, (4) distribution of benefits, and (5) efficiency. Each aspect will be defined and discussed briefly.

Democratic Benefits

The democratic benefits bestowed on society derive from the ability of educational institutions to improve the functioning of a democratic government. For example, the imparting of knowledge on complex social issues and on how government works, as well as an emphasis on participatory citizenship, all contribute to the effective functioning of a democratic society. Likewise the fostering of an educational setting in which students and faculty are drawn from a wide range of social and ethnic backgrounds represents a healthy influence for a society in which persons drawn from a variety of circumstances must interact and cooperate.

The conditions under which these benefits would differ significantly between public and private institutions would be if one set of institutions sponsored a particularly narrow set of educational offerings and catered to a student body drawn from rather homogeneous social, ethnic, and political backgrounds in contrast with the other group of institutions. While such differences do appear among individual institutions--in both the public and private sectors--they do not seem to be salient characteristics of one sector as opposed to another. That is, the educational offerings and heterogeneity of faculties, staff, and student bodies appear to be broad among both groups of institutions. It is doubtful whether a strong case could be made for suggesting large differences in these kinds of democratic benefit between the two sectors.

Spillovers in Knowledge and Technology

A second kind of benefit is that of the spillovers to society in knowledge and technology that emanate from the educational programs of institutions. That is, the process of higher education and research yields benefits not only to the direct participants in the educational setting, but also to the other members of society whose welfare improves from the application of research and technology, the cultural offerings, the dissemination of knowledge, and the increases in knowledge that emanate from the colleges and universities.7/ Artistic and literary accomplishments affect the level

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7/ See Fritz Machlup, The Production and Distribution of Knowledge in the United States (Princeton, N.J.: Princeton University Press, 1962).

of cultural attainment of society generally. Education and research that lead to such discoveries as antibiotics and as a greater understanding of human behavior may improve the human condition. The improvement and dissemination of technical knowledge in agriculture, industry and government contribute to a general increase in the output of society and its living standards. These are examples of spillover benefits from the universities and colleges to the larger society. There appear to be no fundamental differences between public and private institutions in their production of these benefits. That is, the basic organization of both groups is similar, and both contribute to these ends.

Flexibility and Diversity

Flexibility and diversity refer to the ability of institutions of higher education to adapt to changing social needs, as well as the ability to satisfy the large range of needs that exist at any one time. In general, it is believed that the private institutions can be more flexible, diverse, and innovative than the public ones.8/ The complex and cumbersome processes of government generally handicap the public institutions in any quest to adapt quickly to changing circumstances. Often basic changes in such areas as enrollments, special programs, personnel policies, and admissions policies require approval from decision-making units that are removed from the individual public institutions themselves. In contrast, the private institutions usually have the autonomy to move on such issues without obtaining the approval of some higher authority (with the exception of some church-related schools).

Where increases in appropriations are needed, the public institutions are at an even greater relative disadvantage for such requests most usually go through a hazardous and complicated route among the various governing bodies, the legislature, and the executive branch of the State. The private institutions can alter appropriations more directly by adjusting tuition and addressing themselves forthrightly to other sources of funds. Further, the absence of external budgetary controls in the independent institutions means that such matters as faculty salaries, number and types of faculty, and program development can be determined by the administration, faculty, students and trustees of those institutions. This is a distinctively more flexible and adaptive practice than that which characterizes the public institutions where much of the planning is done by external governmental agencies that are somewhat removed from the particular needs of each constituent institution and where uniform budgetary formulas are sometimes applied

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8/ For a discussion, see Lewis B. Mayhew, The Smaller Liberal Arts College (Englewood Cliffs, N.Y.: Prentiss Hall, 1962); and Michael Brick and Earl McGrath, Innovations in Liberal Arts Colleges (New York: Teachers College Press, 1969).

to a large number of institutions whose operating circumstances are very different.[9]

The larger the number of independent decision-makers among institutions, the larger the probable range and diversity of programs. The public colleges and universities have many of their goals and policies set out at some highly centralized level, and thus, they tend to be less heterogeneous than the independent colleges and universities. If a virtue of any set of institutions is to satisfy the diverse needs of the population, the private colleges and universities would appear to have an important advantage over public ones. Moreover, to the degree that the independent institutions compete for students by differentiating their strategies and by innovating, there are additional benefits to society. That is, competition for students among independent colleges and universities, as well as between the private and public institutions, is likely to act as an incentive for producing better education than that which would be produced under a State monopoly.[10] In summary, some of the most important social benefits that the private colleges and universities confer upon the State is their diversity, the potential adaptability to changing needs, and the healthy competition that they promote among higher educational institutions.

Distribution of Benefits

A fourth consideration is the impact of public higher educational expenditures on the distribution of educational opportunity in the State of California. Any higher educational arrangement should be examined in the light of how it distributes the cost of supporting it among and the benefits that accrue from it to different groups in society. On the other hand, the State's system of taxation will create a higher burden for residents in some income groups than in others. That is, the tax burden for supporting higher education is not likely to be equal, as a proportion of income, for all income classes. On the other hand, the admission requirements, institutional arrangements, and cultural patterns of educational participation suggest that some groups will receive greater higher educational investments than others, even under a State plan such as California's where equal access is claimed. Hansen and Weisbrod found that the California system of higher education tends to subsidize persons from higher income backgrounds to a greater degree than those from lower income families.11/ Moreover, the unequal benefits were financed by a tax system that appears to be regressive for incomes below $8,000 and proportional above that amount; consequently, it would appear that the poor are shouldering a greater relative burden of support for public higher education than are the middle class and rich, while receiving less of the benefits.12/

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[9] For further exposition see Financing Independent Higher Education in California by McKinsey and Company, Inc., for The Association of Independent California Colleges and Universities (December 1968) Chap. 2.

[10] For a discussion of these concepts at the elementary and secondary level, see Milton Friedman, "The Role of Government in Education" in Robert A. Solo (ed) Economics and the Public Interest (New Brunswick, New Jersey: Rutgers University Press, 1955): and Henry M. Levin "The Failure of the Public Schools and the Free Market Remedy" The Urban Review, Vol 2, No. 7. (June 1968), pp. 32-37.

If the California system of public higher education promotes ".....greater rather than less inequality among people of various social backgrounds....."13/, what can be said of the equity aspects of public expenditures on private higher education? Given the higher tuition costs to the students in the independent institutions, it is probable that students in the private colleges and universities are drawn from even higher socio-economic backgrounds than those in comparable public institutions. Given the same tax structure, general public support of private higher education should be even more anti-egalitarian than that represented by California's public system.

Accordingly, any arrangement to provide tax dollars to private higher education in California should take account of its impact on the true--rather than theoretical--distribution of higher educational investment among income groups. Of course, to the degree that subsidies to students or independent institutions are earmarked for students drawn from lower socio-economic backgrounds, the financial plan can work to implement a greater degree of equality of opportunity. In any event the distribution of benefits among alternative plans must be considered.

Efficiency

Another consideration is that of efficiency. Efficiency refers to achieving a particular objective with the least amount of resources. To a certain degree, the State of California has the efficiency goal in mind when it wishes to increase the total higher educational enrollments of California students at the least possible public cost.

11/ W. Lee Hansen and Burton A. Weisbrod, Benefits, Costs, and Finance of Public Higher Education (Chicago: Markham Publishing Co., 1969).

12/ Ibid., pp. 73-75.

13/ Ibid., p. 78.

However, the concept of economic and social efficiency is somewhat more embracing in that it is based upon achieving the particular objective for the least possible total cost, public and private.

An example of an efficiency question in financing higher education is the following: Suppose the State finds that the costs per student are higher at a State College in a metropolitan area than one that is several hundred miles away in a rural area. If the State were to minimize its cost per enrollee without considering other social and private costs it might decide to expand enrollments at the latter institution rather than the urban one. Yet, such a decision would pose enormous costs on the metropolitan students who wished to attend school while living at home. Instead, those who could afford it would have to incur added living and travel expenses and would forego much of the part-time employment in the metropolitan area, while those who could not afford it would be prevented from attending college even though several hundred miles away there were enrollment openings.14/

Likewise, we must look at an efficient arrangement of financing higher education as one which minimizes all costs for additional enrollments rather than just those costs that accrue to the State. If a lower cost per enrollee to the State is more than offset by other types of additional costs, the arrangement can hardly be considered to be efficient. Questions of internal efficiency between public and private institutions and with both groups will be raised when we discuss the interpretation of costs.

ORGANIZATION OF THE REPORT

So much for the introduction, and now to the task before us. Since the purpose of this study is to aid in the selection of alternatives for State support of private higher education, we have drawn upon an analytical framework rather than a purely descriptive one. That is, we have oriented the study to aid those who must draw up arrangements to implement such a program. Accordingly, we have established a modus operandi approach to thinking about the problem rather than an exact set of recommendations. There are too many unknowns--both political and technical--to describe a scheme in fine detail. Thus, we have chosen to present information and analysis which should assist the policy maker in constructing a course of action.

14/ This example is not far-fetched in that there are often no openings for qualified students in some parts of the State while excess capacity characterizes public institutions in other areas. It is of little consolation to a junior college transfer residing in Fresno, Sacramento, or San Mateo to know that there are openings at Stanislaus State or Humboldt State, several hundred miles away, when his financial condition constrains him to live at home.

The central analytical tool of this study is the market for privately produced higher education in California. Virtually all plans that stimulate enrollments among the independent institutions can be analyzed in terms of their effects on the supply of, and the demand for, such enrollments. The second chapter develops the theory of the educational marketplace and its applicability to California's system of education. Thus, the basic theoretical groundwork is developed in that chapter.

The third chapter examines the arrangements that other states have made in providing assistance to private higher education. The basis for categorizing these plans is the market analysis carried out in the previous chapter. This approach is used to determine the specific effect on enrollments implied by a large number of different schemes that are presently employed by the states, and provides a heuristic basis for an analysis of costs and enrollments in California.

The fourth chapter develops the cost analysis components of the Report. Cost concepts and the usefulness of present data are examined, and they are integrated into the market framework.

The final chapter of the Report describes fiscal alternatives for financing private higher education. A range of plans is considered with a discussion of their probable effects on enrollment.

Chapter 2

A MARKET ANALYSIS OF STUDENT AND INSTITUTIONAL SUBSIDIES

Before embarking on an exploration of the various and often complicated alternatives for the public financing of private higher education, it is useful to provide a scheme for analyzing such grants. The analytical approach used in this study is the market for independent higher education in California. This market is composed of the sellers of educational services, the independent colleges and universities, and the buyers of such services, individual students and their parents. Enrollments in these institutions are determined simultaneously by the demand for and supply of places at these institutions.

The demand behavior of students and their families is considered to be conventional in that we expect a smaller number of places demanded at the private institutions, the higher the cost charged to the enrollee. The higher the price (tuition and other charges) at the independent school, the more likely that eligible students will seek public alternatives, and the fewer the number of students who will wish to enroll at such institutions. Thus, we assume that the demand for enrollments at private institutions of higher education will vary inversely with the price or cost to the enrollee, other things being held constant.1/

Supply behavior is also considered to be conventional in that institutions will be able to enroll more students the higher the price charged each student. That is, the supply of places at the independent colleges and universities is directly related to price, an upward sloping supply schedule. The supply behavior will be discussed in greater detail in a subsequent section.

At some price that is charged in this educational market, the number of eligible students wishing to enroll in the independent institutions of higher education will be equal to the number of enrollment openings supplied by those institutions. Under these conditions the State can increase enrollments in the independent colleges and universities by (1) providing direct scholarship and loan assistance to students who wish to attend private institutions, thereby increasing the demand for enrollments there and (2) directing grants to the independent institutions themselves in order to increase the supply of enrollment places. Virtually all financial arrangements for stimulating enrollments can be summarized under either of these two types of policy proposals or some combination

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1/ For some insights, see Stephen A. Hoenack, Private Demand for Higher Education in California, University of California, Office of Analytical Studies (1967, mimeo.)

of them. What follows is a more rigorous discussion of the market approach to analyzing State policies for increasing enrollments at private institutions of higher education. Emphasis is on the general phenomenon of the market for enrollments at the independent colleges and universities as a group. Differences in the relationships that are discussed will characterize different types of institutions. The inter-institutional analysis will be undertaken in Chapter 4.

THE BASIC MODEL

In approaching our formal analysis it is necessary to consider what constellation of forces (variables) determines how many students in a given year are going to enroll (buy the educational services provided) in private institutions of higher education. Clearly, the number of units demanded (measured as enrollments) will vary with the price of the service (tuition and other costs), the incomes of the students and/or their families, the price of substitute services (for example, public college enrollment), prices of other goods and services, rates of interest on borrowed funds and many additional factors of varying importance.[2]

Yet, at any given time it is reasonable to assume that all of the variables other than the price of the private educational service remains fixed, and consequently the number of students demanding private educational services will be uniquely dependent upon the price of the service. That is, all else equal, the level of services demanded (enrollments) will be determined by the price of attending a private institution of higher education. The higher the price, *ceteris paribus*, the smaller will be the number of students deciding to enroll and visa-versa. This relationship between price and the number of students is illustrated in Figure 2.1 by the downward sloping demand curve. If the price is P_1 then N_1 students will want to enroll; whereas, with a higher price, say P_2 enrollments would contract to a lower level (N_2).

In the case of educational services, it is clear that merely counting enrollments is not a fully adequate means of measuring output, since the quality of educational service varies cross-sectionally among institutions and over time within the

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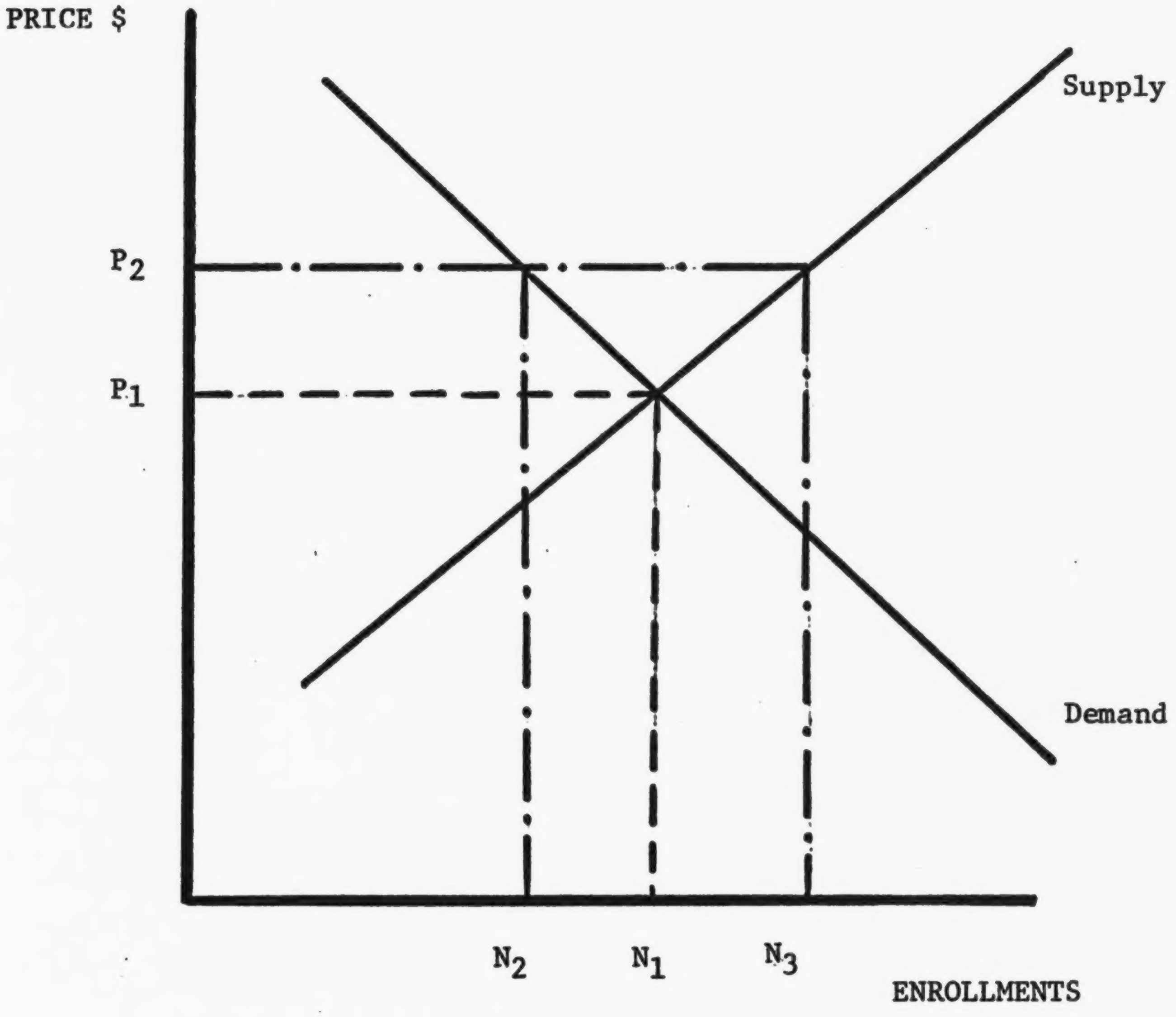
[2] See, for example, Stephen A. Hoenack, *op.cit.*; Robert Campbell and Barry N. Siegel, "The Demand for Higher Education in the United States, 1919-1964," *The American Economic Review*, Vol. LVII (June, 1967), pp. 482-494; Gary S. Becker, *Human Capital: A Theoretical and Empirical Analysis*, New York: Columbia University Press, 1964; and T. W. Schultz, "Investment in Human Capital," *The American Economic Review*, Vol. 51 (March, 1961) pp. 1-17.



EQUILIBRIUM PRIOR TO GRANT

FIGURE 2.1

same institution. However, in order to make the analysis manageable, it is assumed that the quality of educational output is fixed. Where the response to a given program may lead to changes in quality as well as numbers, this will be indicated in the discussion of the particular program.

Were forces other than price, such as income, to change, this could be illustrated by appropriate shifts in the entire demand schedule upwards or downwards. For example, if incomes were to increase, the impact would be an upward shift in the entire demand schedule. That is, at every price a larger number of units of private higher educational services would be bought.

On the other hand, what determines how many units of education will be supplied by private colleges and universities? It is quite reasonable that these institutions will, in the absence of subsidies, provide their services at cost.3/ Thus, if the unit cost of enrollment is constant, that is, it does not vary with increased enrollments, the supply curve will be horizontal. It is, however, entirely likely that unit costs will rise with increased enrollments. One reason for this is that as enrollments expand, institutions may pay higher prices to new inputs (additional faculty, staff, equipment, etc.) to lure them from other industries.4/ Where this is the case the supply curve for the private institutions will be upward sloping to the right. That is, all else equal, the private higher education industry would provide a higher level of services (enrollments) at higher prices than at lower prices. This is illustrated by the upward sloping supply curve in Figure 2.1. If, for example, the institutions would supply N_1 units of education at P_1, a price of P_2 must be established before the level of enrollments would rise to N_3.

An important consideration is the length of time during which it is assumed that the enrollment adjustments take place. All else equal, the longer the time period under consideration, the more nearly horizontal the relevant supply curve will become.5/

3/ See for example, Roger Bolton, The Public Financing of Higher Education, unpublished manuscript, The Brookings Institution, Chap. 4, p. 22.

4/ See, for example, Ibid., Chap. 4, p. 24

5/ For a discussion of costs and the time viewpoint, see Richard H. Leftwich, The Price System and Resource Allocation, (New York: Holt, Rinehart and Winston, 1961), pp. 139-41.

Equilibrium Prior to Subsidy

Before beginning a detailed examination of the results of the different aid proposals it is preferable to examine the operation of the market model with no subsidy being offered. Under this assumption, the model of the private college "market", illustrated in Figure 2.1, is in equilibrium with the price (tuition, fees, etc.) established at P_1 and with N_1 students enrolled (buying educational services) in the private institutions of higher education. The number of students willing and able to buy educational services at private institutions (D) depends upon the price of such services (P). Similarly, the number of students that such institutions will enroll (S) depends upon the price. The system will be in equilibrium where the number of students demanding private higher education will be just equal to the number of enrollments private institutions will enroll. This happens where the supply and demand curves intersect, giving us the equilibrium price P_1 and enrollment level N_1.

Having presented the analysis in the absence of subsidies, it will be possible to examine the effect of the different subsidies by comparison of the results with the present model. A mathematical statement of the "basic model" and the different subsidy models is presented in the appendix to this chapter.

CASE I - SCHOLARSHIP GRANTS (OR LOANS) TO STUDENTS ATTENDING PRIVATE COLLEGES

Consider, for a moment, what price it is which determines how many students are willing and able to demand a private college education. It is the price which they themselves (or their parents) must pay. In the absence of a subsidy, this price was the market price. But, under a scholarship program, the price paid differs from the market price by the amount of the subsidy (scholarship). With reference to Figure 2.2, if, for example, at P_1 there are N_1 students enrolled prior to the institution of a scholarship program, the price after the aid could rise to P_3, which is the initial equilibrium price P_1 plus the amount of scholarship aid (A), and still N_1 students would enroll since the "net" price to the student is still only P_1. In other words, if a wedge is inserted between the market price (the going rate) and the price which students must pay, the entire demand schedule will shift upwards by the amount of the scholarship.

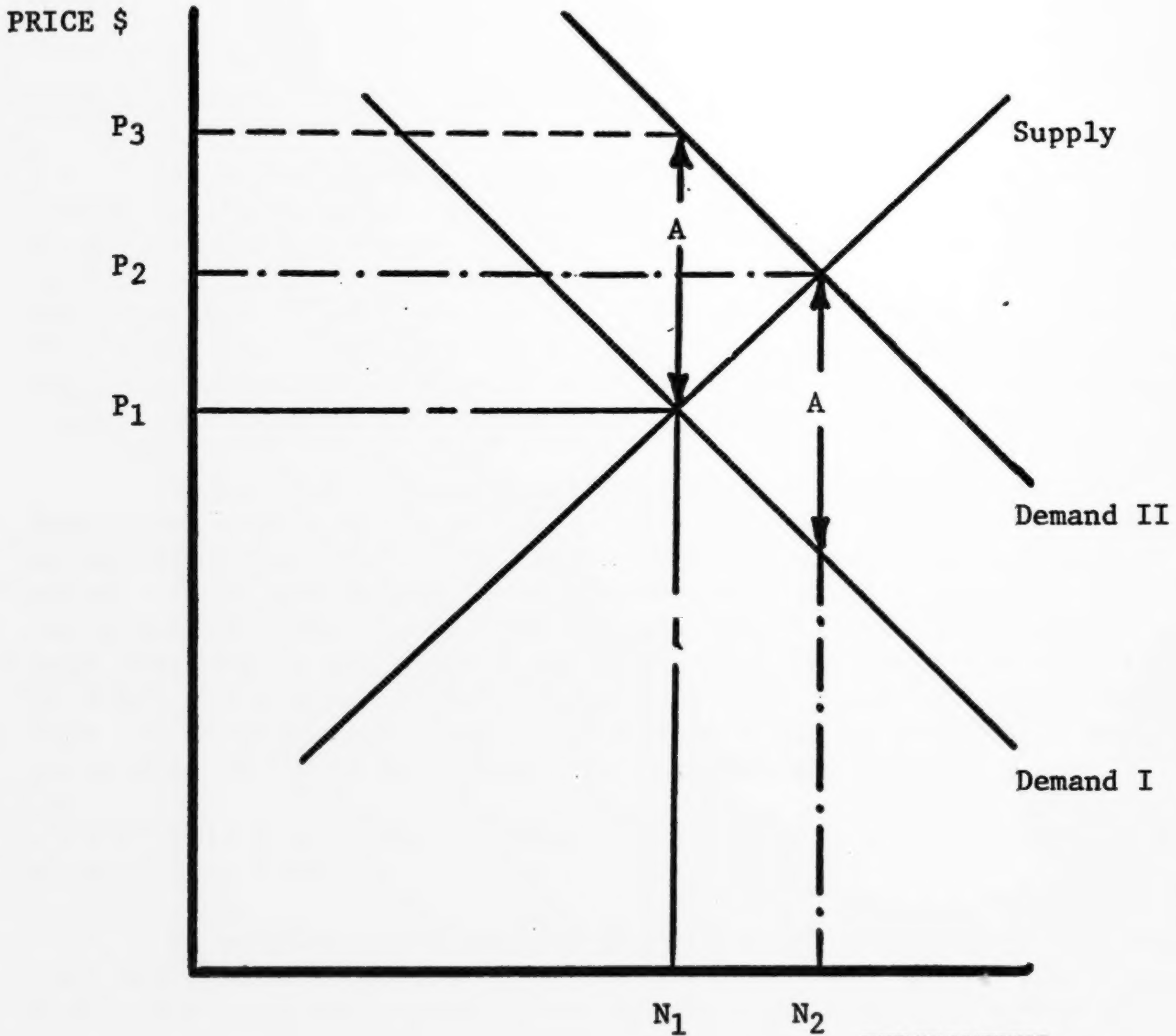
Our demand schedule in Figure 2.1 illustrated how many students (N) would buy education at the going rate (P). If each student who attends a private college is now granted a subsidy (scholarship) of "A" dollars, the price to the student differs from the going rate by the amount of the grant. As a consequence, the "market" demand curve of Figure 2.1 will be shifted upward by the amount of scholarship. This situation is illustrated in Figure 2.2. Similarly, if a student loan program were instituted, the demand curve would shift upwards. Thus, the basic conclusions concerning enrollment response in this case also apply to a loan program.

Results of Student Subsidy Program

The original demand schedule "Demand I" has been shifted upward by the amount of the student scholarship "A" to the new position "Demand II". The result of this is an increase in the equilibrium price from P_1 to P_2. However, it is of importance to note that this increase in price is less than the amount of the scholarship (A). In the general case, as presented in Figure 2.2, the "net" price to the student is reduced. That is, the increase ($\Delta P = P_2 - P_1$) is less than the amount of the subsidy A. The actual increase in price (ΔP) will depend on the slopes of the supply and demand curves. The shallower the slope of the supply curve and the steeper the demand curve, the smaller will be the price increase and visa-versa. Particular institutions that are under-enrolled will typically be operating along a horizontal supply curve so that shifts in demand will not affect price.

Of crucial importance is the increased level of enrollments. The increase in the level of demand generated by the student subsidy may result in a higher price per student which is received by the institutions except for those institutions that are below capacity. This higher price is consistent with the higher level of enrollments, rising in this case from N_1 to N_2. The magnitude of increase in enrollments depends upon the slopes of the supply and demand schedules. The shallower the two schedules, the greater will be the increase in enrollments generated by the subsidy. Thus, it is clear from this analysis that the impact which a scholarship or loan program will have on price and enrollments is dependent upon the nature (specifically, the slopes) of the demand and supply functions. The mathematical model for this analysis is presented in the appendix to this chapter.

In summary, it should be noted that the impact of the student scholarship program (or loan program) is to increase enrollments by increasing demand and to increase the market price (tuition and fees). However, since the market price will, in general, increase by less than the amount of the scholarship subsidy, the "net" price to the student enrollee is reduced.



IMPACT OF SCHOLARSHIP GRANT

FIGURE 2.2

The magnitude of both the price and enrollment increase will depend on the nature of the supply and demand curves. It is important to note, however, that the longer the period of time over which a shift in demand takes place, the lesser the effect on price.

CASE II - INSTITUTIONAL GRANT BASED ON STUDENT ENROLLMENT

An alternative to the previous model where grants were issued (or loans made) to the students is a program of direct aid to the institutions based on the level of enrollment of California residents. Thus, with the present model it is assumed that students receive no subsidies in the form of scholarships but rather that funds are given directly to the institutions based on the number of students enrolled. That is, the institutions of private higher education receive a per unit direct subsidy.

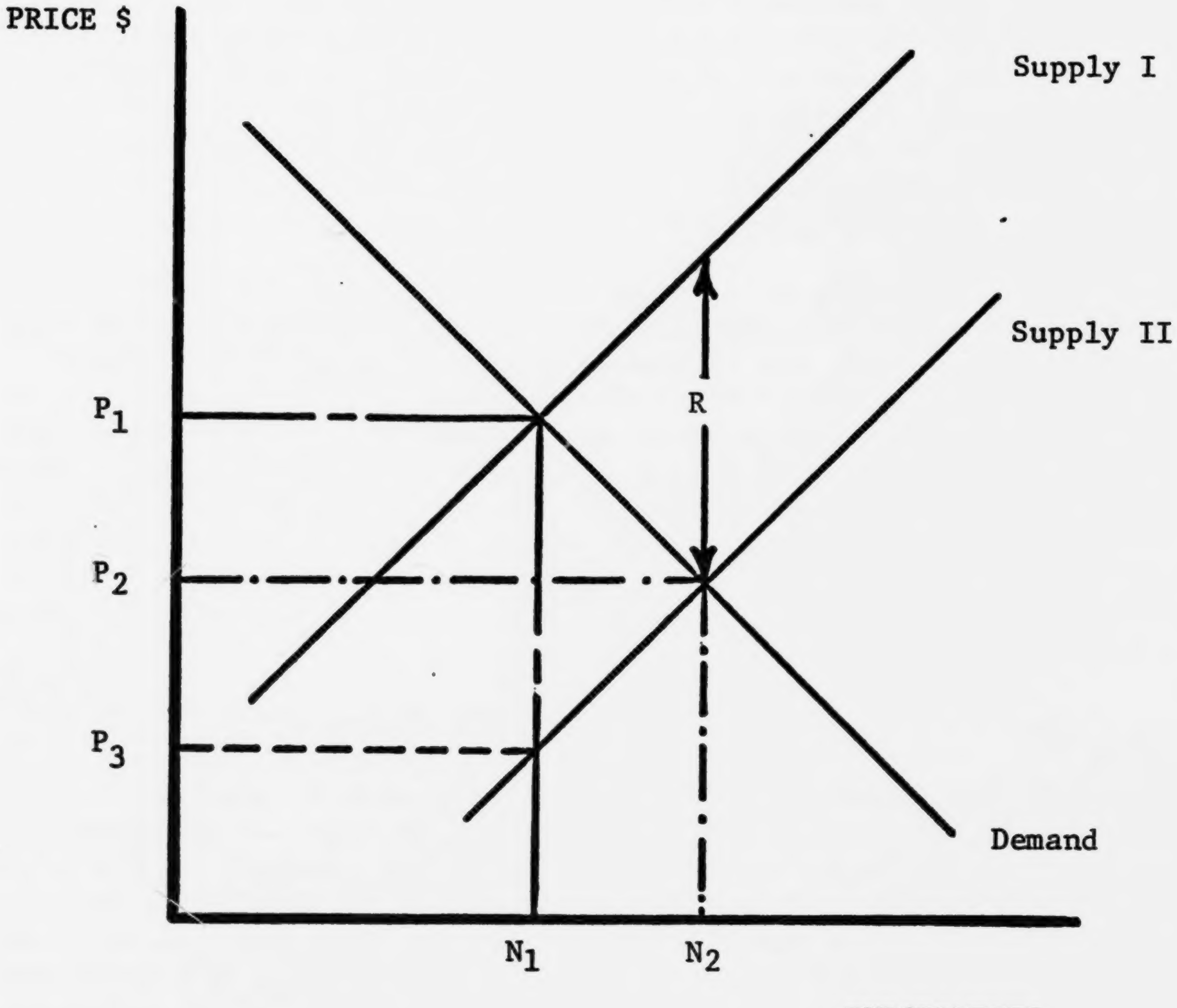
Under these assumptions, what will be the effect on the demand and supply sides of the market? Since the students receive no subsidy, the "net" price facing them is the same as the market price. Thus, the demand curve remains unaffected. However, the net price received by the institutions will be the market price plus the subsidy per student enrolled (R). The result of this is to shift the supply schedule downward by the amount of the subsidy. That is, at every price the institutions would be willing to supply places for more enrollees after receiving a subsidy.

This situation is portrayed in Figure 2.3 where supply has shifted from I to II.

In examining the results of such a program, it may be seen that the equilibrium price has dropped (from P_1 to P_2 in Figure 2.3). But, the decline in price is less than the full amount of the subsidy. Furthermore, enrollments have now increased from N_1 to N_2. In general, these results will hold. That is, the institutional grant based on student enrollments will lead to a price reduction amounting to less than the amount of the subsidy, together with an increase in enrollments. In addition, the shallower the slopes of the supply and demand schedules, the greater will be the increase in enrollments for a given size per-student grant to the institution.

Evaluation of the Two Grant Alternatives

Do the two programs differ in terms of their overall impact on student enrollments and the "net" price which students must pay? Although it may not be entirely obvious from an examination of the diagrams (Figures 2.2 and 2.3) presenting the two


PRICE $
Supply I
Supply II
R
P_1
P_2
P_3
Demand
N_1
N_2
ENROLLMENTS

INSTITUTIONAL GRANT BASED
ON ENROLLMENT

FIGURE 2.3

general grant programs, aid to institutions based on enrollments, and scholarship aid to students, the formal mathematical model in the appendix to this chapter demonstrates that the theoretical impact of the two programs will be the same. In both cases, the result of the grant program is to increase enrollments, and by the same amount. While the market price differs in the two cases, rising in the case of scholarship aid and falling under the institutional grant program, the net price to the student is identical. That is, under the scholarship program, the market price increases as a result of the scholarship aid, but the difference between the new equilibrium price and the scholarship (the net price) will be the same as the market price (which equals the net price) under the institutional grant program.

That is, the theoretical impact of a given public expenditure on enrollments at the private colleges and universities will be identical whether given to students in the form of scholarships or to the institutions as per-student enrollment subsidies. The important point is that both types of pure approaches yield the same solution, and it is incorrect to say that *a priori* one will work and the other will not.6/ The choice between the two approaches is more likely to be one based upon political expediency, equity, or administrative simplicity, matters that will be discussed in Chapter 5.

CASE III - SIMULTANEOUS GRANTS TO STUDENTS AND INSTITUTIONS

We have to this point considered the theoretical framework and analyzed the effects on prices and enrollments of 1) scholarship aid to students and 2) subsidies to institutions based on student enrollment in private institutions of higher education in California. The third case, constructed from the combination of the other two cases is to grant each student scholarship aid amounting to "A" dollars and simultaneously give private institutions subsidies of "R" dollars for each California student enrolled.7/ This section examines the theoretical impact of such a combination program.

6/ For this reason the Joint Committee on Higher Education's blanket endorsement of direct aid to institutions as an effective approach while belittling the efficacy of scholarships is invalid. See *The Academic State*, A Progress Report to the Legislature on Tuition and Other Matters Pertaining to Higher Education in California by the Joint Committee on Higher Education (Sacramento, 1968), p. 39.

7/ This arrangement is similar to the quest of the independent institutions for counterpart funds to the institution for each national fellowship or scholarship holder enrolled.

The model of simultaneous student and institutional grants based on enrollment is illustrated in Figure 2.4. In this model, the supply curve has moved down from Supply I to Supply II by the amount of the per-student institutional grant (R), while the demand curve has risen from Demand I to Demand II, a distance equaling the amount of the student scholarship aid (A).

The most obvious effect of such a policy is the increase in enrollments from N_1 to N_2. Had there only been aid to students, enrollments would have been N_A, which is greater than N_1 but less than N_2; or if grants had been restricted to institutions, enrollments would have been N_R which exceeds N_1 but is less than N_2.[8]

The effect on the market price is not as obvious. In our illustration (Figure 2.4), the price has declined. This will not be true, in general, but will depend on which schedule, supply or demand, shifts the more. The amount of shift depends in turn not only on the relative magnitudes of student aid (A) and per student institutional grants (R), but also upon the slopes of the supply and demand schedules. The shallower the slope of the demand curve and the more steeply sloped the supply curve, the greater will be the tendency toward an increased price for given changes in R and A. On the other hand, the more shallow both curves are, the greater will be the enrollment response to given increases in scholarships and institutional subsidies. A detailed mathematical analysis of this model is also presented in the Appendix to this Chapter.

ESTIMATING THE SUBSIDY COST OF ENROLLMENT INCREASES

Of crucial importance in evaluating a subsidy program is the dollar cost involved in increasing enrollments by a given magnitude. In order to conduct such an evaluation it will be necessary to determine, to some degree, how responsive enrollments will be to changes in per-student subsidies. As we have seen previously, the increase in enrollments resulting from a given increase in a subsidy, either scholarship or institutional grant, depends upon the nature of the supply and demand curves. Specifically, the increase depends upon the slopes of the supply and demand curves. The shallower the supply and demand curves, the greater will be the enrollment increase. A commonly used measure of responsiveness is that of elasticity, which is the subject examined below.

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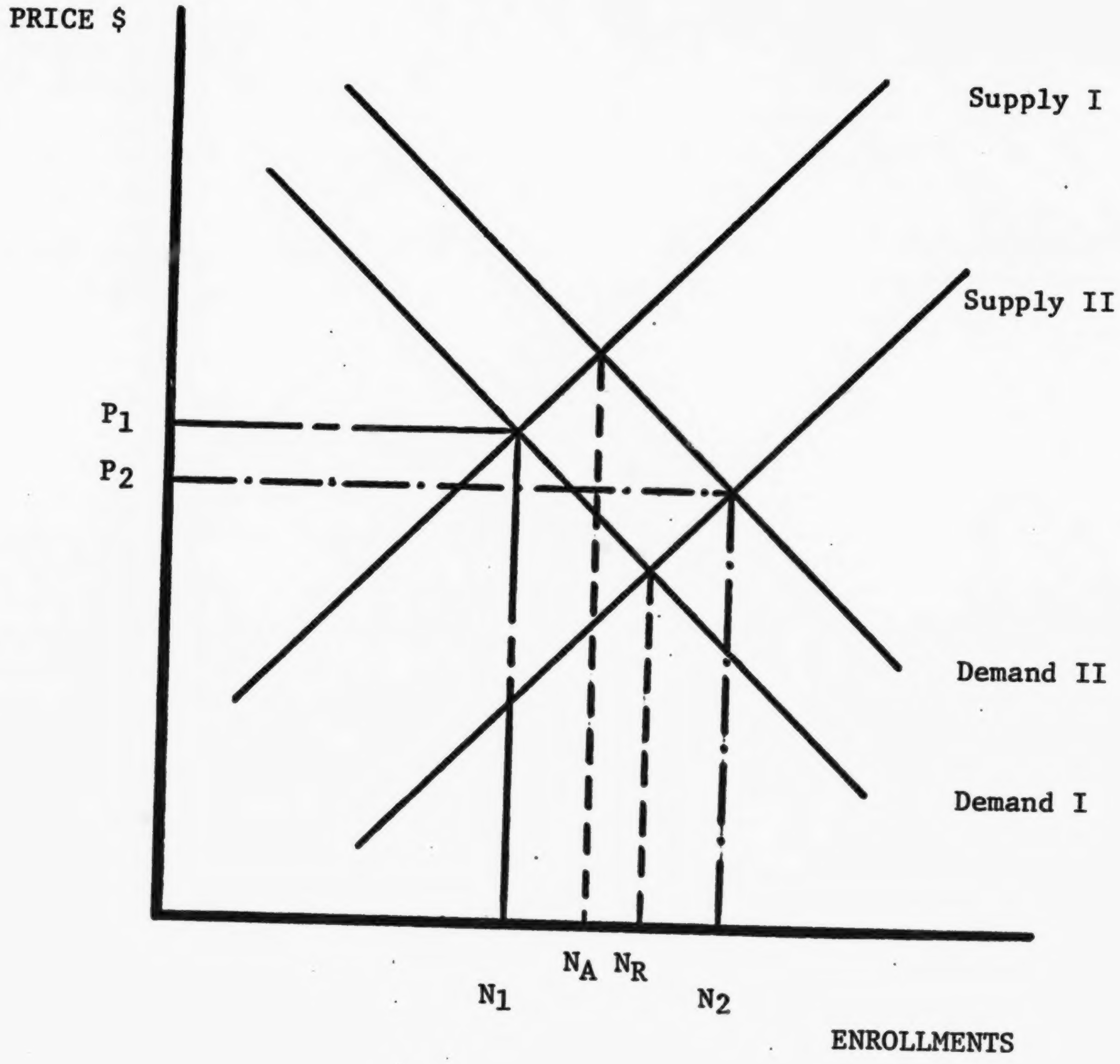
[8] N_R is shown greater than N_A only because in our illustration R exceeds A. Had the reverse been true, N_A would have exceeded N_R.



COMBINED EFFECTS OF STUDENT AID
AND INSTITUTIONAL GRANTS

FIGURE 2.4

Elasticity of Supply and Demand

The elasticity of demand is a measure of responsiveness. Specifically, it assesses how responsive the number of units demanded is to changes in the price charged for the good or service. In the present context, the elasticity of demand would be a measure of how responsive students were to changes in the price of private higher educational services. Elasticity is measured in percentage terms, so that the response would be the percentage increase in students' enrollment demand resulting from a one percent decrease in the price to the students of enrolling. The measure if calculated as:

$$\text{Elasticity of Demand} = \frac{\text{Percent Change in Enrollments Demanded}}{\text{Percent Change in Price}}$$

Demand elasticity in excess of unity (1) is referred to as elastic, indicating that a one percent change in price leads to more than a one percent change in quantity. An inelastic demand implies that a one percent change in price leads to less than a one percent change in the quantity demanded.

The elasticity of supply is measured in the same manner; the only difference being that the data is with reference to the supply curve, so that:

$$\text{Elasticity of Supply} = \frac{\text{Percent Change in Enrollments Supplied}}{\text{Percent Change in Price}}$$

Demand and supply curves which are perfectly elastic are indicated by a horizontal line, while those which are perfectly inelastic (elasticity = 0) are perfectly vertical lines. Demand and supply curves that are shallow, that is, those having a small slope tend toward being elastic, although strictly speaking, elasticity depends not only on the slope but on the price and quantity where you are on the curve. In general, the more elastic the demand and supply curves, the greater will be the enrollment response to a given increase in subsidies, either to students or to institutions.

A PROBLEM IN FINANCING INCREASED ENROLLMENTS: A VARIATION ON THE SAVINGS BANK PARADOX

For many years businessmen, governments, economists, and other observers pondered what they considered to be the very peculiar financial behavior of savings and loan institutions.[9] In times of rising interest rates the institutions seemed reluctant to raise the dividends paid on savings and loan shares, a necessary action if the institutions were to attract more loanable funds. At the same time, interest rates on new mortgages were rising so that it would appear to be profitable to attract more funds to lend to mortgage holders as long as the spread between dividends paid by the institutions to shareholders and interest received from mortgagees was substantial. As it turns out, the savings and loan institutions were behaving very rationally because: (1) the higher rate of interest could be obtained only on the purchase of new mortgages, not on the existing stock of mortgages held by the institutions; while (2) higher dividends would have to be paid to all shareholders on both the additional savings attracted by the higher dividend yield as well as on the savings that were already obtained by the institutions at lower rates. To summarize, the savings and loan institutions could only obtain higher yields on new loans while paying higher dividends on both new savings as well as existing savings. Thus the cost of raising dividends was likely to be greater than the returns from lending out additional funds.

The application of the savings bank paradox to the goal of stimulating enrollments at the independent colleges and universities is straightforward. On the one hand, about three-quarters of the enrollees in the independent institutions of the State of California are residents. That is, without State subsidies about 75,000 California residents are already attending the independent colleges and universities of the State. If the State wishes to expand enrollments by providing direct grants to students or per-student subsidies to the institutions, the State will have to pay for all of the students who would have enrolled in the independent institutions in the absence of such subsidies. That is, if we wish to apply the equity criterion of treating equals as equals, then it is difficult or impossible to differentiate between students who would only attend the independent institutions with a subsidy and those who would have attended anyway. Thus, the gains to the State from subsidy-induced increases in enrollments would only be for the additional enrollments in private institutions; while the cost to the State would be determined by all of the existing California enrollees as well.

The impact of this paradox is to make the dollar costs of a given enrollment increase very high. Or, alternatively, the enrollment response to a given dollar outlay will be low.

9/ See for example, Gerald I. Weber, "Interest Rates on Mortgages and Dividend Rates on Saving and Loan Shares," The Journal of Finance, Vol. XXI (September, 1966), pp. 515-521.

A more detailed analysis of this problem is presented below, but let it suffice to say that some modification of a straight per-student subsidy--whether on the demand or supply side of the market--will be needed to avoid the savings bank phenomenon.

Cost of the Savings Bank Phenomenon

By way of introduction, it should be recalled that under the hypothetical scholarship program described above, each California resident attending a private institution of higher education receives a scholarship of a fixed amount (A). For the sake of simplicity, it is assumed that all students presently attending California institutions are California residents. The analytics of this program were illustrated in Figure 2.2. Figure 2.5 shows a similar diagram with emphasis on program cost.

The total cost of the program to the State is equal to the cost per student (A) times the number of California students enrolled (N). Thus, since the number of students enrolled after the implementation of the grant program is N_2, the total cost of the scholarship program is $(A - N_2)$ which is indicated by the area ACDF. If the level of enrollments in the absence of a scholarship program is N_1, the subsidy received by the students who would have enrolled even in the absence of a scholarship would be $(A - N_1)$ or the amount indicated by area ABEF. The remaining area BCDE represents the dollar amount of subsidy received by those students who would attend with a scholarship program, but not in its absence.

It is clear from the above discussion that enrollments will increase by a relatively small amount $(N_1 - N_2)$ for a large dollar expenditure for scholarships $(N_2 \times A)$. The reason for the lack of enrollment sensitivity to dollars spent for scholarships is that the aid is received not only by those who would attend only when granted a scholarship, but also by those who would have attended in the absence of a scholarship. In other words, the aid is granted not only to those students at the margin $(N_1 - N_2)$, but to all California residents attending (N_2). N_1 students would have attended without aid, but since it cannot be determined who the students are who would have attended without aid,[10] scholarships are awarded to all students. Thus, the majority of the funds are spent not on those students who are responsive to the aid, but those who would have attended anyway.

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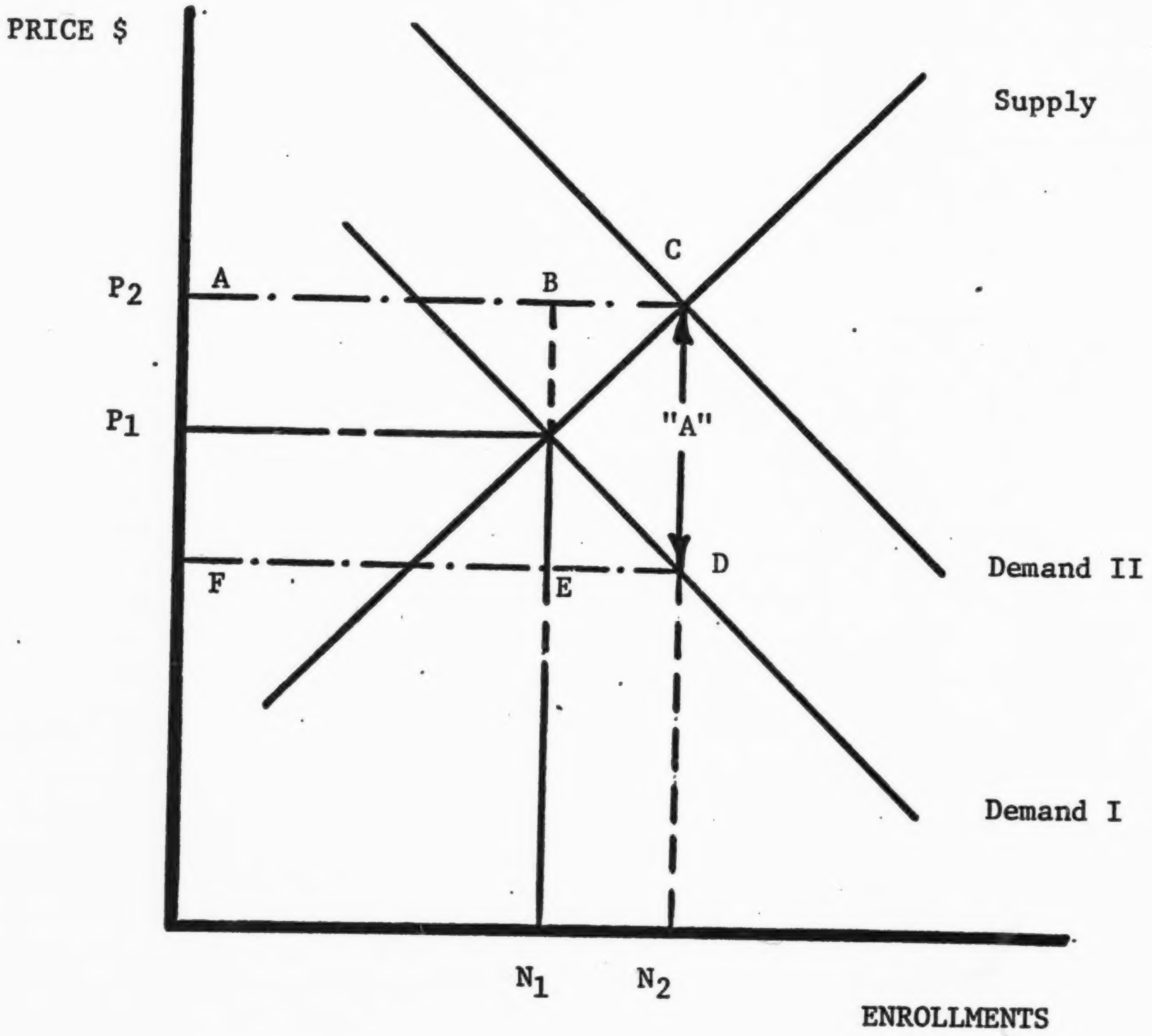
[10] It is likely that a high proportion of those students who would attend private colleges in the absence of scholarship aid come from upper income families, while a relatively high proportion of those attending at the margin $(N_1 - N_2)$ come from lower income families. Thus, an imperfect and approximate means of identifying the students at the margin would be the institution of scholarship aid based on income.



COSTS OF SCHOLARSHIP PROGRAM

FIGURE 2.5

The same conclusions apply to the program of institutional subsidies based on student attendance. This program is illustrated in Figure 2.6. Since it has been shown previously that a priori the enrollment response is likely to be the same for the scholarship program and the institutional subsidy program, assuming that the scholarship per student equals the institutional subsidy per student, the same dollar amounts will be spent on the student at the margin and on all students under the previously described programs.

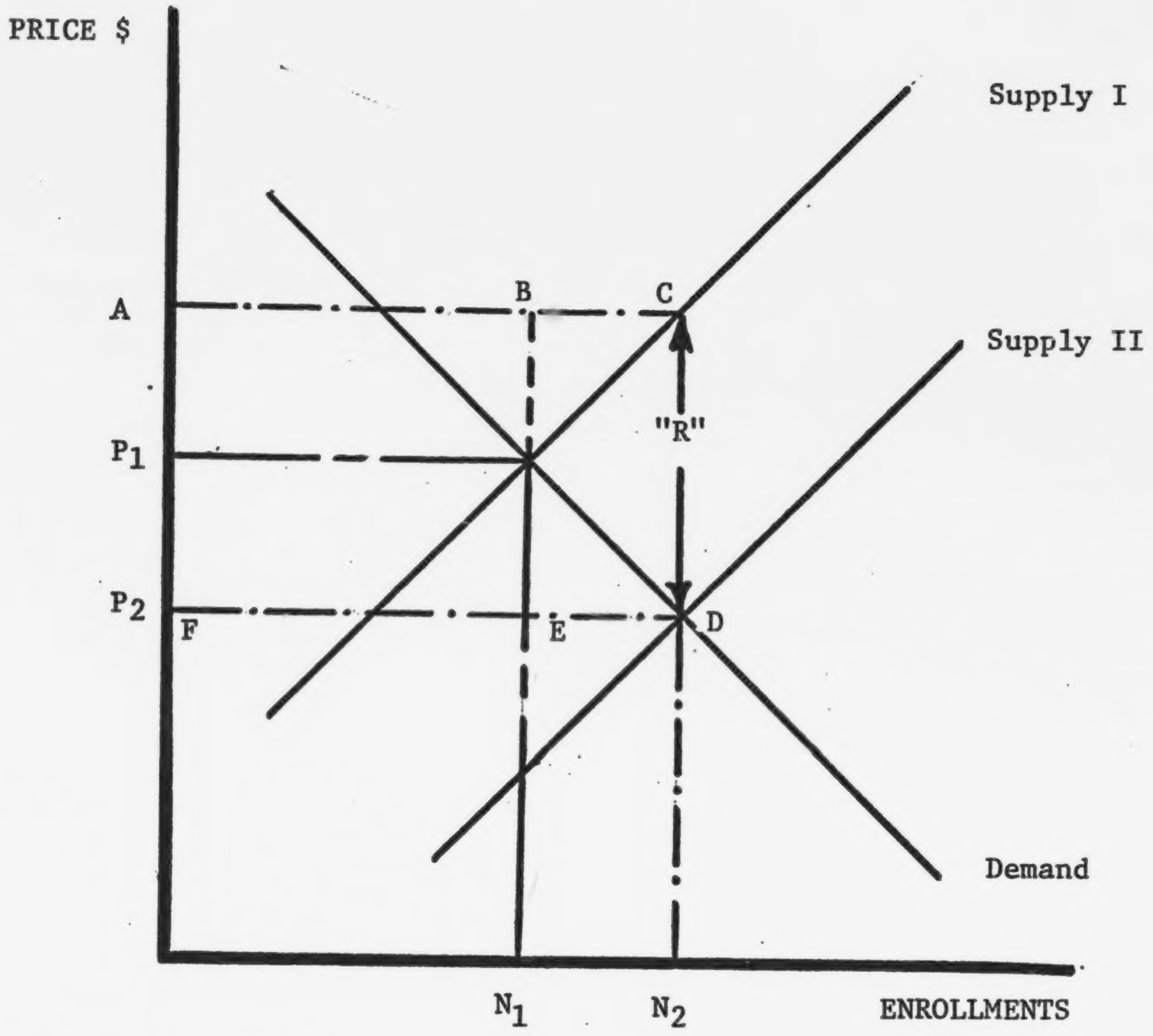
BLOCK GRANTS TO PRIVATE INSTITUTIONS OF HIGHER EDUCATION

Under the financial aid programs described above, it has been assumed that funds were distributed on a per-student basis. That is, scholarships were awarded directly to students, and aid to private institutions of higher education was based on student enrollment. One alternative to these programs is the provision of a lump sum grant to a private institution of higher education. Such a program would not be directly dependent upon enrollment, but might be geared either to achieving specific results which the State considers to be of a high priority, or general expansion of the colleges' enrollment capacity. A number of such alternatives is considered below.

Expansion of Enrollment Capacity

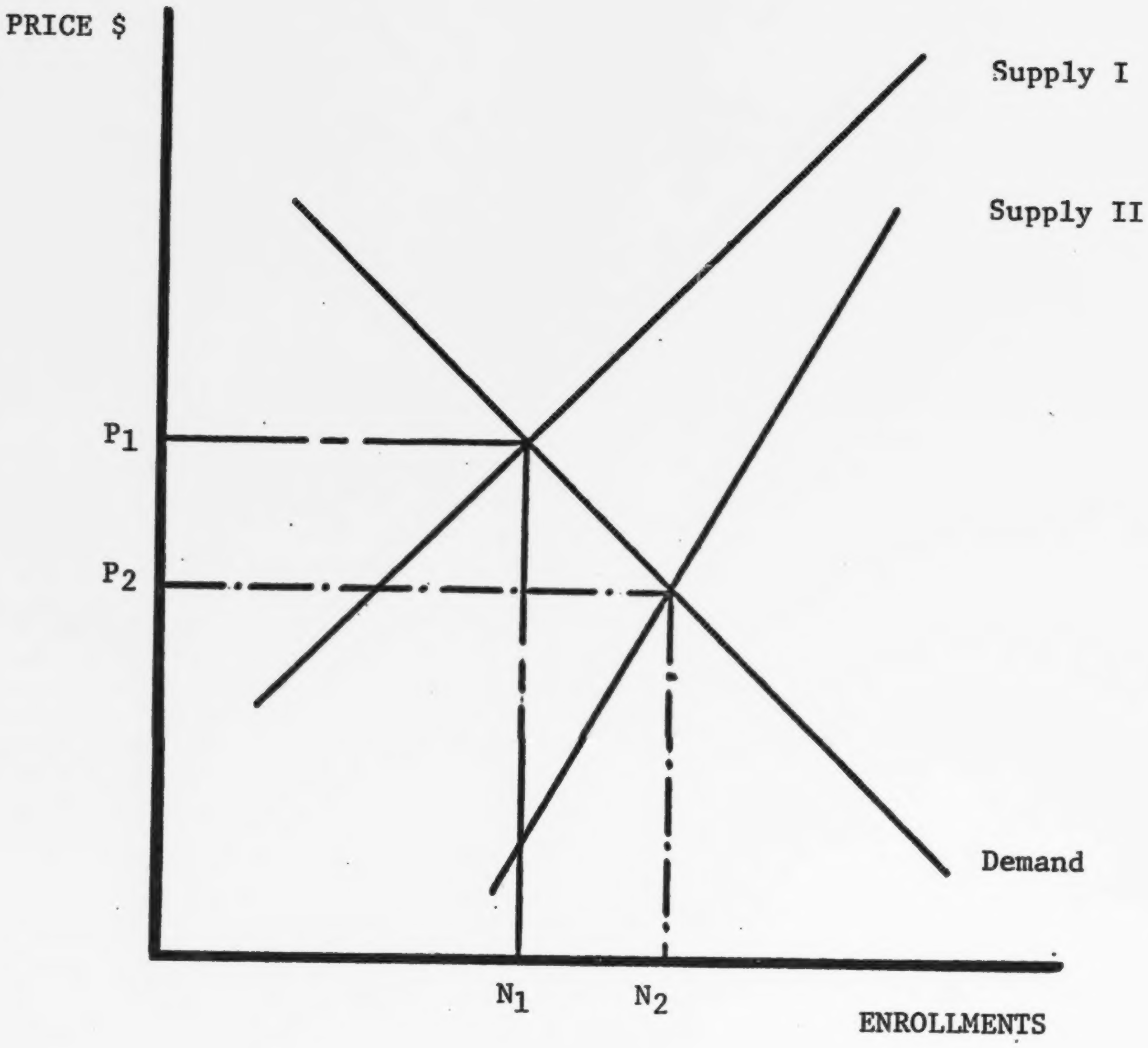
Clearly, the number of students who may enroll in private institutions of higher education is restricted by the size and the number of classrooms, laboratory facilities, and ancillary facilities. In order to encourage private institutions of higher education to expand their physical capacity, the State might directly aid construction of new buildings. The impact of such a program is to lower the costs of the institution. The reduction in construction costs is reflected in lower unit costs per student and subsequently will be reflected in a downward shift in the supply curve for the private college "industry". Thus more enrollment places would be made available at each price after such a grant.

This increase is represented by a downward movement of the supply curve to the right from I to II as illustrated in Figure 2.7. However, it is of interest to note that the curves are not parallel as they were in the case of the institutional aid based on enrollments as in Figure 2.3. This difference stems from the fact that capital construction grants are a lump sum grant and as a consequence, the reduction in costs per student declines with added enrollment, that is, as the grant is spread


PRICE $
Supply I
A
B
C
Supply II
"R"
P_1
P_2
F
E
D
Demand
N_1
N_2
ENROLLMENTS

COSTS OF INSTITUTIONAL GRANT PROGRAM

FIGURE 2.6


PRICE $
Supply I
Supply II
P1
P2
Demand
N1
N2
ENROLLMENTS

IMPACT OF CAPITAL CONSTRUCTION
GRANT

FIGURE 2.7

over more and more students.[11]

Although, on the surface, the results of the capital construction grant and the per-student institutional grant seem similar in terms of price reductions and enrollment increases, there are a number of significant differences which should be considered in evaluating these alternative programs. First, since funds for capital construction are allocated for the specific purpose of construction of new facilities, there is a degree of control over where the funds are allocated which is not possible with general aid based on enrollment. Second, capital construction grants may be made for restricted purposes. If, for example, the State places great emphasis on science, grants might be restricted for use in expanding laboratory and science classroom facilities.

It is clear that grants restricted to capital expansion provide a better means of enforcing certain priorities of the State; whereas, general aid based on student membership allows the institutions greater latitude in allocating funds to those purposes which they deem to have the greatest benefit in terms of the goals of the institution. Both approaches may serve useful purposes, so that a combination is not only feasible, but may be desirable as we will discuss in Chapter 5.

CONCLUDING REMARKS

We have examined the theoretical impact of programs involving general aid to students and to institutions. The theoretical discussion suggested that for a given dollar outlay, the increase in enrollment at the independent colleges and universities was likely to be the same whether aid was given to the students or to the institutions directly. Since the impact of the general student aid program appears to be the same as that of the institutional grant program based on enrollments, the preference for one program over the other seems to rest on considerations other than enrollment response per dollar outlay. How great the actual response would be depends upon the nature of the supply and demand curves as represented by their slopes. In either case, though, the existence of a "savings bank phenomenon" implies that the enrollment response will be quite low for any given dollar outlay.

Furthermore, it was assumed in our analysis that the quality of output would remain fixed, and that the program response would be in terms of increased enrollments. Yet, if all California residents attending independent institutions were subsidized, it is possible that under certain conditions some of the subsidy would be used to improve quality rather than to increase enrollments. That is, for general subsidies the possibility exists for institutional tradeoffs between enrollment expansion and quality improvement. For example, institutions receiving per-student subsidies would not have to expand at all to receive a subsidy for all of their existing students who were California residents, those who would attend even in the absence of a subsidy. This would apply to about three-quarters of the present student enrollments at the State's independent colleges and universities. Such an effect could be reduced or eliminated by pegging subsidies only to enrollment increases from an arbitrary base.

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[11] Since the cost reduction decreases with added enrollment, the difference in cost per student, and consequently the difference between the two supply curves will be greater for low levels and smaller for high levels of enrollment.

The final alternative considered was that of construction or block grants to institutions. Since the grant is made for a specific purpose, for example, construction of new facilities, this grant offers greater control for targeting funds toward expansion rather than toward a general increase in the quality of the existing program, or toward other purposes which an institution may deem of high priority.

MATHEMATICAL APPENDIX TO CHAPTER 2

This Appendix presents the formal mathematical models discussed in Chapter 2 together with an analysis of their implications with regard to enrollment and price responses.

THE BASIC MODEL

1) $D = f(P) = a + b\,P$ $\qquad a>o,\ b<o$

2) $S = g(P) = c + d\,P$ $\qquad c\lessgtr o,\ d>o$

3) $D = S$

Where: D = No. of students buying education services at a given price.

S = No. of students private colleges will enroll at a given price.

P = Price per student.

Both the general form and the simplified linear form are presented in equations 1) and 2). For the linear model, the equilibrium price is $P_1 = (c - a) / (b - d)$.

CASE I: STUDENT SUBSIDY

1) $D - f(P,A) = a + b\,(P - A)$ $\qquad a>o,\ b<o$

2) $S = g(P) = c + d\,(P)$ $\qquad c\lessgtr o,\ d>o$

3) $D = S$

Where: Net price to students = $P - A$
Demand schedule shifts upward by A
Supply schedule is unaffected since price P = price received by educational establishments.

Solving for the new price, we get:

$$P_2 = \frac{c - a + bA}{b - d} \qquad = \qquad \frac{c - a}{b - d} + \frac{bA}{b - d}$$

Without the subsidy, the price was $P_1 = \dfrac{c - a}{b - d}$

The increase in price is:

$$\Delta P = P_2 - P_1 = \frac{c - a}{b - d} + \frac{bA}{b - d} - \frac{c - a}{b - d} = \frac{bA}{b - d}$$

Thus, the increase in price is, in general, less than the subsidy "A" 12/.

Solving for the effects on enrollments we find that with no subsidy to students, the number enrolled is:

$$N_1 = a + b\,P_1 = a + b\,\frac{(c - a)}{(b - d)}$$

While, after a subsidy to students, enrollments rise to:

$$\begin{aligned} N_2 = a + b\,(P_2 - A) &= a + b\,\frac{(c - a + bA}{b - d} - A) \\ &= a + b\,\frac{\left[c-a + bA - A\,(b - d)\right]}{b - d} \\ &= a + b\,\frac{(c - a + dA)}{b - d} \end{aligned}$$

Thus, the increase in enrollments is:

$$\begin{aligned} \Delta N = N_2 - N_1 &= a + b\left(\frac{c - a + bA - A}{b - d}\right) - A - b\,\frac{(c - a)}{b - d} \\ &= b\,\frac{(c - a)}{b - d} + \frac{bbA}{b-d} - bA - b\frac{(c-a)}{b-d} \\ &= b\left(\frac{bA}{b-d} - A\right) \\ &= A\left(\frac{b^2}{b-d} - b\right) = A\left(\frac{b^2 - b\,(b-d)}{b - d}\right) \\ &= A\,\frac{(b^2 - b^2 + bd)}{b - d} = \frac{A(bd)}{b-d} \end{aligned}$$

12/ Remember that b is a negative number and that d is positive. If, for example, b = -3 (the slope of the demand schedule) and d = 2 (the slope of the supply schedule), then:

$$\Delta P = \frac{bA}{b-d} = \frac{-3A}{-3-2} = 3/5\ A < A.$$

Only when the slope of the demand schedule is zero, that is, when b = oo, will $\Delta P = A$. When d = o, the same will be true.

In general, the change in enrollments will be positive since $b > o$ and $b - d$ must also be negative. Since the numerator is the product of the slopes, while the denominator is a sum (of two negative numbers), the greater the values of b and d, the greater will be the increase in enrollments. This corresponds to the two schedules being of shallow slope.

CASE II: INSTITUTIONAL GRANT BASED ON ENROLLMENTS

1) $D = f(P) = a + b\ P$ $\qquad a > o,\ b < o$

2) $S = g(P_1\ R) = c + d\ (P + R)$ $\qquad c \lesseqgtr o,\ d > o$

3) $S = D$

Where: R = amount of subsidy received by institutions per student enrolled.

The price after the subsidy is:

$$P_2 = \frac{c - a}{b - d} + \frac{dR}{b-d}$$

Thus, the change in price (ΔP) is given by:

$$\Delta P = P_2 - P_1 = \frac{c - a}{b - d} + \frac{dR}{b-d} - \frac{c - a}{b - d} = \frac{dR}{b-d}$$

This indicates that the price will, in general, decline,13/ but less than the amount of the subsidy R.

In examining the impact on enrollments, we first find the level of enrollments after the subsidy (N_2):

$$N2 = D2 = a + b\ P_2 = a = b\ \frac{(c - a + d\ R)}{(\quad b - d \quad)}$$

the change in enrollments $\Delta N = N_2 - N_1$ is:

$$\Delta N = a + b\ \frac{(c - a + d\ R)}{(\quad b - d \quad)} - a - b\ \frac{(c - a)}{(b - d)}$$

$$= \frac{bc - ab + bdR - bc + ab}{b - d} = \frac{bdR}{b-d}$$

$$\text{or } \Delta N = \frac{(b\ d\ )}{(b-d\ )} \quad R$$

13/ Remember that b is negative, thus $d - R\ /\ (b - d)$ must be negative. For example, if $d = 2$ and $b = -3$, $P - 2R/(-3-2) = -2R/5$

Thus, the impact on enrollments resulting from a per-student institutional grant ($\Delta N = \frac{b\ d}{b - d} R$) is the same as that of an equal grant of aid to students ($\Delta N = \frac{b\ d}{b-d} A$)
Again, the shallower the demand and supply schedules (large values for b and d) the greater will the increase in enrollments.

In evaluating the two cases, it is of importance to examine the net price paid by students. Under the student aid case, the change in price was: $\Delta P = \frac{b\ A}{b - d}$: while the net price change to students is:

$$\Delta P - A = \frac{b\ A}{b - d} - A$$

$$= \frac{bA - A\ (b-d)}{b - d} = \frac{bA - bA = Ad}{b - d}$$

$$= Ad/(b - d)$$

This, it should be noted is the same as the price reduction in the case of the institutional grant, if the aid (A) is equal to the subsidy per student (R).

Thus, we conclude that for an equal amount of aid per student (A) or institutional subsidy per student (R), the result will be to increase enrollments by the same amount, and to lead to the same reduction in the net price to the student.

CASE III: SIMULTANEOUS GRANTS TO STUDENTS AND INSTITUTIONS

1) $D = a + b\ (P - A)$ $\qquad a > 0,\ b < 0$

2) $S = c + d\ (P + R)$ $\qquad c \lesseqgtr 0,\ d > 0$

3) $S = D$

Solving for the price after the institution of the grant programs (P_2) we find:

$$P_2 = \frac{c + d\ R + b\ A - a}{b - d}$$

The change in price is then:

$$\Delta P = P_2 - P_1 = \frac{c + d\ R + b\ A - a}{b - d} - \frac{c - a}{b - d}$$

$$\Delta P = \frac{c - a}{b - d} + \frac{d\ R + b\ A}{b - d} - \frac{c - a}{b - d} = \frac{d\ R + b\ A}{b - d}$$

It is clear from this result that the price change will be positive if the absolute value of bA exceeds dR.14/ Thus, the more shallow the slope of the demand curve and the more steeply sloped the supply curve, the greater is the tendency toward an increased price for given changes in R and A.

Solving for enrollments we find that the new enrollment level (N_2) is:

$$N_2 = a + b\left(\frac{c + dR + bA - a}{b - d} - A\right)$$

giving us an enrollment increase of:

$$\Delta N = N_2 - N_1 = a + b\left(\frac{c + dR + bA - a}{b - d} - A\right) - a - b\frac{(c-a)}{(b-d)}$$

$$= \frac{b(c - a)}{b - d} + \frac{b(dR + bA)}{b - d} - bA - \frac{b(c - a)}{b - d}$$

$$= \frac{b(dR + bA)}{b - d} - bA$$

Clearly, the more horizontal our demand and supply curve 15/ (large value for b and c), the greater will be the response in enrollments to given changes in student aid (A) and enrollment based aid to institutions (R).

14/ Bear in mind that b is negative, so that b - d will always be negative.

15/ Since "b" and "d" are the inverses of the slopes of the demand and supply curves respectively, high values for b and d imply low slopes.

Chapter 3

ARRANGEMENTS OF OTHER STATES FOR FINANCING PRIVATE HIGHER EDUCATION

In the preceding chapter we developed a theoretical framework for analyzing the effect on enrollments of different state arrangements for financing private higher education. It was demonstrated that the effects of the various subsidies--both to institutions and to students--may be traced through the market mechanisms of supply and demand. Before applying this analytical approach to independent higher education in California, it is helpful to examine briefly the arrangements made by other states for supporting independent institutions and students who choose to attend independent colleges and universities.

The following discussion of other states' plans will be consistent with the preceding conceptual analysis. That is, a variety of subsidies operating on either the demand or supply side of the market for higher education are presently in use in many other states. A presentation of these examples may serve to demonstrate the many alternatives open to the State of California.

Recent Nature of State Assistance

State aid to independent institutions of higher education and to students attending those institutions has been a recent phenomenon, at least in terms of the magnitude of such aid. That is, up until the very recent past such arrangements, if they existed at all, were exceedingly modest in scope. There are several reasons for the rather sudden emergence and growth of state plans for assisting private higher education. First, the financial squeeze which is characterizing independent institutions in many states is essentially a product of the sixties. As we noted in Chapter 1, increased competition from the public sector has been a major factor in this fiscal crisis, so the states feel some responsibility to offer assistance to their constituent independent colleges and universities.

Second, the rate of increase in costs has accelerated in recent years, far outdistancing the cost increases anticipated by higher educational planners. Since attempts to raise the productivity of resources in higher education have been largely unsuccessful, the rising cost phenomenon has also put a strain on the financial capability of many independent institutions in the other states.

Third, over the previous decade there has been a huge increase in the number of students wishing to pursue higher education. Increasingly, state governments have viewed the fulfillment of these social demands as a top priority on their agendas. Thus, by fostering the survival and growth of the independent institutions, the state can reduce the enormous growing pains of the public institutions.

Finally, there has been an increasing concern with upgrading the quality of higher education where it has been found to be relatively weak as well as satisfying a diversity of other educational priorities. While this report is less concerned with these goals than with enrollment increases in California's independent institutions, other states have addressed many other qualitative factors related to their independent colleges and universities. For example, subsidies among other states are devoted: to aiding those students who lack adequate financial resources with the goal of more nearly attaining equality of educational opportunity; to improving laboratory and library facilities in order to upgrade curricula; to fostering research in certain fields which have high priority within the state, and so on.

Consequently, in the ensuing presentation we should be mindful of the multitude of aims pursued by the other states. Not all of these goals are applicable to California, so the reader should not be bewildered by the phantasmagoria of plans and arrangements described. Indeed, most of the specific programs can be categorized within the general supply and demand framework outlined in Chapter 2. The following list represents a classification of schemes with a brief description of how each subsidy affects the market for independent higher education.

DEMAND SUBSIDIES

Those subsidies which increase demand for private higher education by lowering the effective cost to the student include the following three categories:

I Grants to Students

Generally given to student via institution; sometimes on direct cash award basis to student. Includes outright grants to or for students based on scholastic achievement or competitive examination. Sometimes determined on basis of need alone; more often on basis of need in conjunction with performance. Generally given only for in-state institutions; sometimes for use either at out-of-state or in-state institutions. For specialized graduate programs which state does not offer, out-of-state attendance at specific institutions is often specified.

Examples:

direct scholarships
tuition reduction supplements
incentive plans

II Student Loans

Both direct and guaranteed. May include forgiveness plan. May be specified for use at in-state institutions only, as well as for either in-state or out-of-state use.

III Tuition Equalization

An amount paid to or for a student who has been admitted to a private school as a means of reducing the differential between public and private tuition and fees. Determined by need and/or performance. May be used at out-of-state institutions or specified for in-state use.

We recall that a subsidy on the demand side of the market is defined as one which lowers the effective cost or price to a student of purchasing higher education. This implies that the demand curve for higher education is shifted outward as demonstrated in Figure 3.1 which shows the effect of a demand subsidy on enrollment. The subsidy shifts the demand curve from I to II. This will be translated into an increase in enrollments from N_1 to N_2.1/

Grants to students (e.g. scholarships) operate to lower directly the cost of attending an institution of higher education. The resultant increase in enrollment may occur in two ways: First, some students who would be limited to the public institutions, given their own financial means, would choose to attend independent colleges and universities if adequate financial assistance were available. Second, a student would be able to purchase more years of schooling with financial aid. For example, a student who might be limited to two years of college attendance given his own private means would be able to attend far more than two years with scholarship aid. Both effects serve to increase student demand for higher education.

Student loans act to subsidize students in much the same way as do direct grants, despite the presumption that the funds

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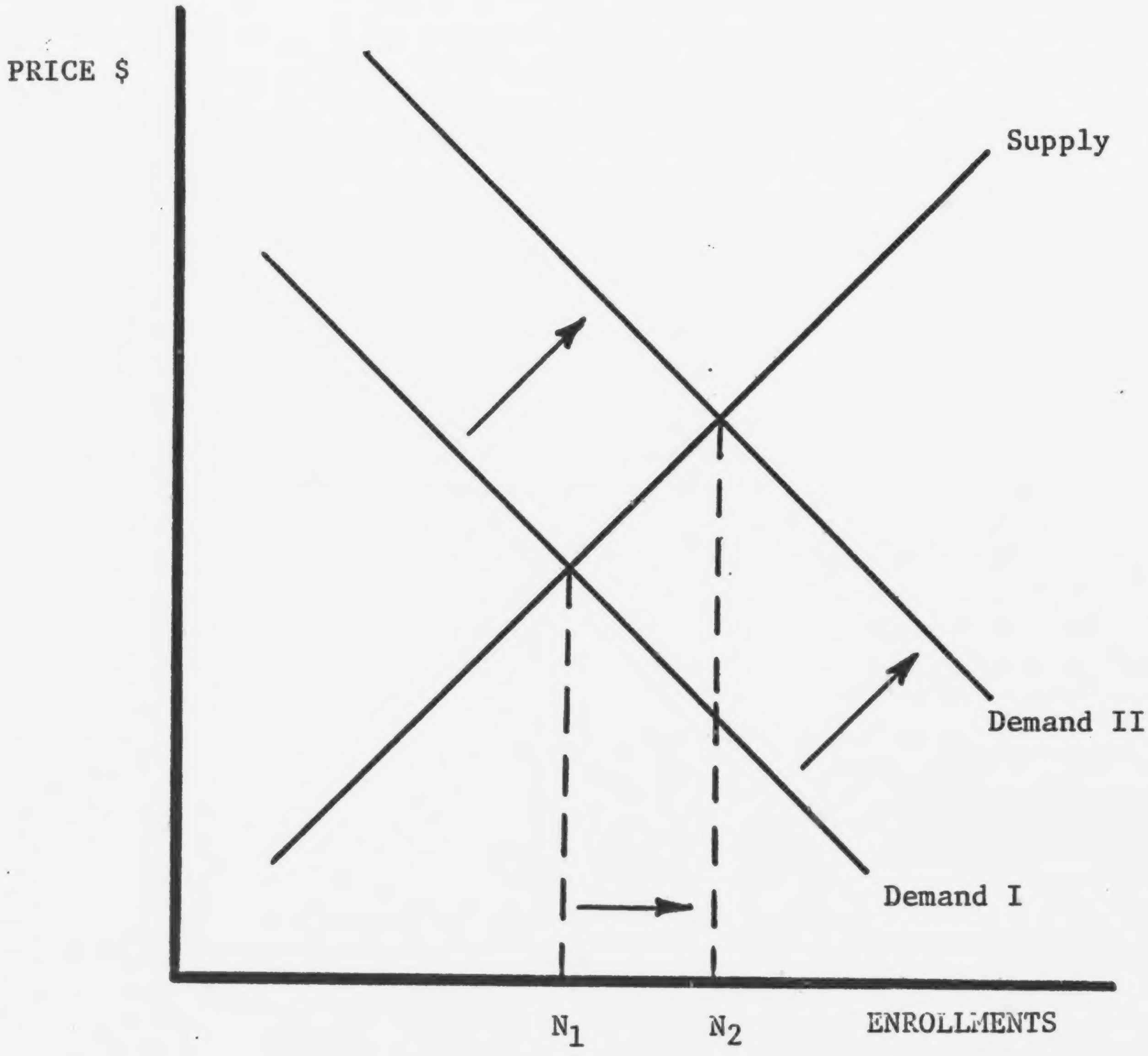
1/ In this case it is only enrollments that increase, but it is possible for demand subsidies to be translated partially or fully into increases in quality rather than quantity.


PRICE $
Supply
Demand II
Demand I
N1
N2
ENROLLMENTS

EFFECT ON ENROLLMENT OF DEMAND SUBSIDY

FIGURE 3.1

will at some point be paid back. (Even this is not true in states with forgiveness plans where if, for example, the student maintains residence in the state for a certain period of time after receiving his education, he is not obligated to repay the loan.) Since students are often not in sufficiently secure positions financially to borrow money directly from banks, state loans enable students to finance their education by borrowing money. In addition, higher education loans generally have much lower interest rates and easier repayment terms than do general bank loans. State loan programs also often provide a guarantee on student loans. All of these factors contribute to the lowering of effective cost of higher education (or of borrowing money to pay for higher education) to a student who receives a state loan. This in turn increases demand for higher education.

Tuition equalization grants operate similarly to other direct grants except that the amount of scholarship is linked to the difference in charges between the public and independent institutions.

By reducing the gap in student charges between public and private institutions the relative desirability of attending the latter increases. That is, the demand for independent higher education will increase by reducing the cost differential between it and its public substitute.

SUPPLY SUBSIDIES

The types of subsidies on the supply side used by other states are far more diverse than the demand subsidies. By a supply oriented subsidy we refer to plans that lower the effective cost to the institution of offering higher education to a given enrollment of students. The following represent a general classification of grants affecting the supply side:

I. Direct Grants to Institutions

Includes outright "gifts" of money for land, instructional purposes, structure (including construction, and equipment). Sometimes specified for certain uses, sometimes for general use by institutions at their discretion.

Examples:

(1) facilities construction grants
(2) grants for professional schools (e.g., medical, dental)
(3) grants for dormitory construction
(4) grants by legislative appropriation for general use
(5) grants for development of specific instructional programs

II. Special Programs[2]

Includes state provision of all or part of the following kinds of services and services provided by states to institutions at less than cost.

Examples:

(1) special agencies which administer specialized instructional programs (e.g., in the arts)
(2) advisory services (e.g., management consulting)
(3) funding of cooperative instructional programs among private and/or state institutions
(4) provision of staff services (e.g., library consultants, curriculum advice, etc.)
(5) facilities lease

III. Contracts

Issued by states to private institutions.

Examples:

(1) research contracts and grants
(2) contracts for instructional services

IV. Tax Relief

Relief of certain state taxes for institutions and tax deductibility of private contributions to those institutions (students and any other source of tuition and fees not included).

Examples:

(1) tax credits
(2) property tax exemption
(3) income tax remission
(4) gasoline tax refund
(5) tax-free bonds
(6) sales tax exemption
(7) tax deductions for contributions to higher educational institutions

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[2] Portions of these descriptions of subsidies are derived from Supplements to State Support of Private Higher Education, Oct. 7, 1968.

V. Loans to Institutions

Generally for some specified purpose (e.g., land, structures, construction, equipment, special programs). Includes direct loans and guarantee of bank loans.

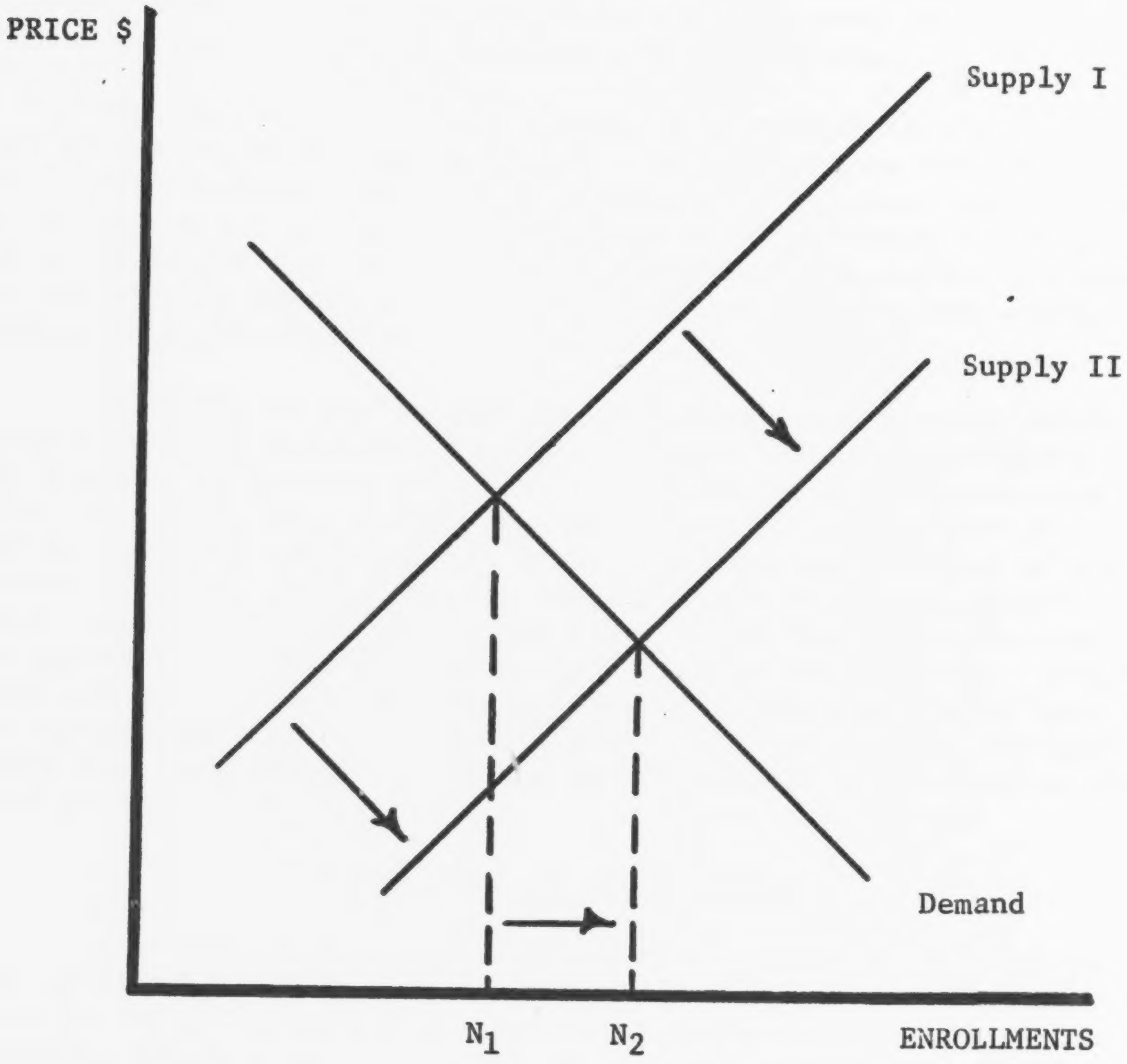
Examples:

(1) capital construction loans
(2) facility loans
(3) land purchase loans

A subsidy on the supply side of the market is one which reduces the cost to the institutions of providing a given level of enrollments. This implies that the supply schedule for independent higher education shifts downward toward the right as demonstrated in Figure 3.2 which shows the effect of an institutional subsidy on enrollment. The subsidy shifts the supply curve from I to II, and this is translated into an increase in enrollments from N_1 to N_2. At any given cost to themselves, the institutions can provide more enrollments when operating with subsidies. Thus, the direct grants have a straight forward effect on increasing enrollments and/or institutional quality.

Special programs may or may not aid enrollments depending upon their exact nature. In the simplest case--and the one which most resembles a direct grant--the state provides certain services to the institution which the institution would have to provide for itself without the state's subsidy (e.g., a library consulting service). A subsidy of this form lowers the effective cost to the institution to offer "more" higher education at a given cost to itself than it could prior to the state's provision of the service.

In addition, the state often is in a position to offer certain services to the institution which the institution could not obtain on its own. An example is provided by cooperative programs which pool resources from various state and/or private institutions on a state-wide basis and make the pooled resources (e.g., colloquia, films, guest lectures) available to private colleges or universities within the state. The function of the state may, in this case, be essentially organizational, but effective costs to the private institutions may be lowered by the availability of such services. Given, for example, five private institutions, all of which require a certain series of films for their curricula, a state clearing-house kind of arrangement might enable all five schools to operate sharing the same set of films rather than having each incur the cost of the full series.



EFFECT ON ENROLLMENT OF SUPPLY SUBSIDY

FIGURE 3.2

Contractual arrangements with the state take several forms. They are probably not a significant factor in reducing institutional cost, but they are discussed for reasons of completeness. Funding of research or specific instructional services by the state on a contractual (or grant) basis may lower the cost (supply) curve for the institution by covering some portion of general overhead costs for institutional operations.

Tax relief may also be viewed as a subsidy to the supply side of the higher education market. Tax exemptions for the institution decrease the cost of operations. Moreover tax credits or deductions for private contributions to educational institutions act to stimulate supply by creating incentives for business funds and individuals to provide private subsidies for the independent colleges and universities.

Finally, on the supply side, we have loans to institutions. These constitute subsidies in several ways. First, they enable institutions to operate at a given level regardless of short-run deficits. Thus, any cutback in some source of funding for an institution need not result in disrupted programs, halting of construction plans, and so on. In addition, the state may be able to offer loans to the institution at a far lower interest rate than the institution could obtain in the financial marketplace. Interest costs can also be reduced if the state will guarantee loans made to the independent institutions of higher education. These savings permit the institutions to expand at lower costs to themselves than could be done without state aid.

SPECIFIC PLANS OF OTHER STATES

A number of specific versions of each kind of subsidy have been utilized in other states. A subsidy summary of these plans is found in Table 3.1 in a state-by-state review. Each plan is labeled according to the type of subsidy and the way it affects the educational marketplace (that is, whether it represents an influence on the supply or demand side of the market). A brief description was available to us.

It should be apparent that the plans outlined in Table 3.1 vary widely in both their complexity and scope. Moreover, not all are necessarily applicable to the State of California. Those that are particularly promising for California are discussed further in Chapter 5. While this table comprises a fairly complete list of current state subsidies, both actual and proposed, it is not necessarily complete or up-to-date. Changes in state arrangements are occurring frequently enough that no compilation can guarantee completeness. Yet, given the time scope of this study, the information is as inclusive as we were able to derive.

Greater detail regarding each of the subsidies may be found in the references following the table. These sources are specified according to the reference numbers imprinted directly beneath the names of each state. The exact provisions and data on implementation can be obtained from the various state governments.

TABLE 3.1

SPECIFIC PLANS OF OTHER STATES

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Alabama 1, 3, 5	S	direct grants	granted to 3 private higher education institutions by general appropriation each year
3	S	special agency	special state agency to administer specialized program: Alabama Commission on the Arts
1, 3	S	contracts for instructional services	with Tuskegee Institute for undergraduate and graduate instruction in agriculture, veterinary medicine, and engineering
3	D	scholarship aid	granted to students via particular institutions; medical, dental, general
Alaska	D	student loans	loans to Alaskan students in Alaskan institutions; yearly amount forgiven for each 6 months a graduate remains in Alaska
Connecticut 5	S&D	125% tuition plan	state pays institution 125% of tuition per student; institution uses additional 25% as it desires (1970-71: $1,500,000 for 700-750 students, $100-1000/student/year)
3, 7	S	research contracts & grants	for any research "relevant to the interest and welfare... of the citizens of Connecticut" (1968: $437,894 allocated)
3	S	special agency grants	Connecticut Commission on the Arts grants funds to encourage participation in the arts

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
3	D	student loans	state funds loaned to students for study in or outside of Conn. via United Student Aid Funds
7	D	scholarships	
Colorado 7	S	construction loans	
7	S	limited property tax exemption	
Delaware 7	D	scholarships	many given out-of-state
Florida 1, 5, 7	S	direct grants	to the University of Miami a subsidy per medical student (1969: $5,500/year/student)
1	S	special agreement	use of city hospital for clinical teaching of medical students
1	S	contracts for services	
5, 9	D	scholarships	administered by Scholarship and Loan Commission
5, 9	D	student loans	administered by Scholarship and Loan Commission (1969: $1200/student) granted via institution, recipients 388; special program teachers at $600/student (1969: 1550 recipients)
9	D	student loans	granted by Florida Loan Guarantee Program (1967: 953 recipients)

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Georgia 7	S	facility loans, direct grants, tax credits PROPOSED	proposal would relate to 19 private colleges and universities now organized as Private Colleges and Universities Organization
7	D	student grants PROPOSED	also aimed towards Private Colleges and Universities Organization
3	D	scholarships	on a very limited scale
Illinois 5, 9	S	direct grants	for instructional purposes to medical-dental institutions (1969-70: $1,900,000)
5, 9	S	direct grants	for capital construction purposes to medical-dental institutions (1969-70: $6,100,000)
6	S	direct grants PROPOSED	to private institutions for capital construction, general use; ($500/State Scholarship & Grant student enrolled, $100/freshman & sophmore, $200/junior and senior)
6	S	research contracts PROPOSED	
6	S	advisory service PROPOSED	advisory service in institutional management by state for institution ($200,000 for 1st year)
7	S	limited property tax exemption	
6	S	construction and facilities loans PROPOSED	to be made by Illinois Building Authority on same basis as to state colleges and universities

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
6	S	contracts for educational services PROPOSED	particularly for disadvantaged youth and adult education. ($1 million for first year suggested)
6	S	special cooperative agency	in form of fund ($400,000 for first year) to establish inter-institutional cooperation among public and private institutions.
3, 6	D	scholarships	currently assisting over 1,000 students (1969-70: $17,170,000; 1968: $200-1000/student/year)
3	D	incentive plan	based on need; up to $1,000
Indiana 7	S	income tax remission	
1	S	tax credit	individuals and corporations may claim up to 50% of contributions to higher education institutions as tax credit (up to $50 for individuals and $500 for corporations)
3	D	scholarships	
3	D	incentive plan	
7	D	tuition equalization	
Iowa 5, 8, 9	D	tuition equalization assistance	state pays difference between public and private higher education up to $1000 for Iowa students at private institutions. (1969-71: $4.5 million); paid to institution (1969-70: 2000 recipients)
3, 9	D	scholarships	(1969-70: $100-800/student/year)

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Kansas 3	D	scholarships	
Kentucky 3	S	contracts for instructional services	with Tuskegee Institute in Alabama to provide limited veterinary training to Kentucky students
7	D	student loans	guaranteed by state
Louisiana	S	special agreement	Louisiana State Hospital Board and Tulane University Medical School
Maine 7	S	contracts for educational services PROPOSED	proposed for specific programs in private schools
3	D	scholarships	granted via cash award program directly to students; may be used out of state if student desires program not offered within state
Maryland 3, 5, 7	S	capital construction loans	for specified facility; matching funds basis (not granted since 1966)
1	S	contracts for services	
5, 7, 9	D	scholarships	granted via institutions; for Teacher Education programs at in-state institutions. Recipient must teach in Maryland public schools for at least 2 years after graduation. (1968-69: 65 recipients received 3 year grants)

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Massachusetts 7	S	facilities loans	non-guaranteed loans; tax free bonds issued by Educational Facilities Authority
7	S	grants-in-aid PROPOSED	
3	D	scholarships	limited to 50%; may be used out-of-state
Michigan 7	S	gasoline tax refund	
7	S	income tax remission	
3, 7	D	scholarships	granted via cash award program directly to students ($100-800/year)
3, 7	D	tuition equalization	same range as scholarship program ($100-800); students may qualify under both for maximum of $1600 per year; paid directly to students
Minnesota	D	scholarships	$200-$800 plus $100 for books (per year); renewable for 3 years of undergraduate work in state
Mississippi 7	D	scholarships	
Missouri 3	S	cooperative programs PROPOSED	between public and private institutions and organizations financed by state funds
3	S	loans for facilities construction PROPOSED	

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
3	S	direct grants for facilities construction PROPOSED	
3	S	provision of staff services PROPOSED	consultative service on financing, library management, curriculum, statistical work regarding higher education in state
7	S	limited property tax exemption	
7	S	sales tax exemption	
3	S & D	contracts for educational services PROPOSED	tuition payment equivalents plus additional funds
3	D	scholarships PROPOSED	
New Jersey			
7	S	facilities loans	non-guaranteed loans
1	S	special agreement	use of city hospital for Seton Hall Medical School's clinical teaching
1,3	S	contracts for educational services	with Newark College of Engineering and Trenton Junior College
3	D	scholarships	of up to $500/year/student; paid directly to student; may be used out of state

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
3, 7	D	tuition equalization plan	of $500, may be awarded in addition to the scholarship above; paid directly to the student
7	D	loans-student	directly to students
New Mexico 3	D	loans-student	student loan guarantee program
New York 1, 5, 7	S	direct grants	based on number of earned-degrees conferred by institution ($400/B.A., $400/M.A., $2400/Ph.D.; 1970-71: $32 million)
3, 5, 7, 9	S	capital construction loans	funds generated by bonds issued by New York Dormitory Authority for any building construction (currently constructing $219 million worth of assistance)
3, 9	S	special program	Distinguished Professorship Program, financed by state (1969-70: 10 recipients of $100,000/year each)
1, 3	S	contracts for educational services	at Cornell, Alfred, Syracuse, (and others in "areas of critical need").
3, 7, 9	S	special program: direct grants	Program for Expanding Medical Education; direct grants to medical schools on per student basis (1969-70: $1,410,000)
9	S	direct grant	to Brooklyn Polytechnic Institute for engineering programs (1969-70: $2,000,000)
3, 9	D	loans to students	for use in or outside of New York up to $7500 per student; given by Higher Education Assistance Corp. at 3% following graduation (1969-70: $1,494,000)

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
3, 5, 9	D	scholarships	most extensive scholarship program in any state; includes following: (1969-70 total for Regents graduate fellowships alone: $1,494,000) 1 - Regents College Scholarships: $250-1000/year for undergraduates at in-state schools. 1965-66: aided 20,000 students. 2 - Scholar Incentive Program: $100-500/year for undergraduates, $200-$800/year for graduates. In-state use only. 1965-66: aided 154,000 students. 3 - Basic Nursing Scholarships $200-$500/year. In-state use only. 4 - Regents' Fellowships for doctoral study: $250-2500/year. For students in arts, sciences, engineering in N.Y. State institutions. 5 - Regents' College Teaching Fellowship Program: $500-2500/year. For students interested in teaching college in N.Y. State; may be used at out-of-state institutions. 6 - The New Lehman Graduate Fellowship. Any U.S. resident doing graduate work in social sciences, public, or international affairs attending N.Y. State institution. $4000-5000/year.
7	D	tuition equalization	

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
North Carolina			
3	S	cooperative programs	2 centers financed by state and private institutions for institutes, guest lecturers, programs in arts; The Learning Institute, half financed by state (research in education: '66 budget was $240,000)
8	S	financial aid	to medical schools
1	S	contracts for services	
3	D	scholarships	for vocational rehabilitation students, additions to Veteran's Commission scholarships, medical scholarships
3	D	student loans	to education, medical, and undergraduate students
Ohio			
7	S	capital loans	
7	S	facilities lease	state facilities built by state and leased to private institutions
7	S	construction assistance PROPOSED	
7	D	tuition equalization	
Oklahoma			
3	S	contracts for educational services	per student funds paid to out-of-state dental institutions; not to cover tuition

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Oregon			
3, 4, 7	S	contracts for educational services	contracts for credit hours earned by Oregon students with private institutions ($80/45 quarter hours of instruction)
4, 7	D	scholarships	granted in form of cash awards to students; for all costs of higher education
7	D	student loans	in combination with work opportunities recommended to private institutions, all higher education costs may be covered for students based on need
Pennsylvania			
5	S	direct grants	for construction purposes (facilities) & general use (1967-68: $65 million for 15 institutions)
3, 5, 9	S	direct grants	to 3 "state-related" institutions (1968-69: $124,665,940)
7	S	tax-free bonds made available	
7	D	tuition reduction supplements	given via institution; (1967-68: $25 million for 2 universities)
3	D	scholarships	may be used out-of-state
Rhode Island			
7	S	tax-free bonds made available	
7	D	scholarships	given directly to students; may be used out-of-state

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
South Dakota 7	D	student grants PROPOSED	applicable to 6 4-year and 2 2-year institutions
Texas 1	S	contracts for services	
7	S	institutional grants, contracts for professional education, cooperative programs	proposed by Texas Association of Colleges and Universities for presentation to legislature
7	D	student grants PROPOSED	as above
3	D	student loans	to any student paid via his institution
Vermont 1	S	direct grants	annual legislative appropriations directly to institutions
7	S	construction loans	
7	S	tax relief	
7	S	contract	for support of Bureau of Industrial Research
3	D	scholarships	granted via Vermont Student Assistance Corporation; paid jointly to student and institution; may be used out-of-state
3	D	student loans	administered by Vermont Student Assistance Corporation

TABLE 3.1 (cont'd)

STATE	SUPPLY/ DEMAND SUBSIDY	TYPE OF SUBSIDY	BRIEF DESCRIPTION
Virginia 3	D	student loans	guaranteed loan program for institutions within the state
Washington 7	S	contractual arrangements PROPOSED	present legislative program
7	D	scholarship program PROPOSED	as above
West Virginia 3	D	scholarships	to handicapped students, teachers
3	D	scholarships PROPOSED	tuition grant for students at private institution; also, per student grant to institutions greater than per student tuition
Wisconsin 3	D	scholarships	for use at any institution in state, given directly to student
7	D	student grants	for dental students at Marquette School of Dentistry
3	D	tuition equalization	paid directly to student

SOURCES:

1. The Challenge of Achievement, A Report on Public and Private Higher Education in California to the Joint Committee on Higher Education of the California Legislature (Sacramento: 1969).
2. M. M. Chambers, "Current State Tax Support," Phi Delta Kappan (October 1968), pp. 113-116.

3. Pfnister, Allan O., and Quehl, Gary H. *Report on the Status of Private Higher Education in the State of Missouri, 1966-67*. Prepared for the Missouri Commission on Higher Education, Jefferson City, Missouri. Springfield, Ohio: Wittenberg University, June 1967. Reproduced.

4. *State Assistance to Private and Independent Higher Education in Oregon*, Report of the Ad Hoc Committee on Private and Independent Higher Education (Salem, Oregon: Oregon Educational Coordinating Council, October 1968).

5. State Reports on New York, Connecticut, Iowa, Maryland, Florida, and Pennsylvania; prepared by the staff of the Coordinating Council for Higher Education, State of California (October 1969) mimeo.

6. *Strengthening Private Higher Education in Illinois*, The Commission to Study Non-Public Higher Education in Illinois (Springfield, Illinois: Illinois Board of Higher Education, March 1969).

7. "Supplement to State Support of Private Higher Education of October 7, 1968." Mimeographed. Los Angeles: Association of Independent Colleges and Universities, January 10, 1969.

8. "Iowa Launches New Tuition Assistance Program at Private Institutions; North Carolina to Aid Medical Students at Duke, Wake Forest." *National Association of State Universities and Land-Grant Colleges Circular Letter #24* (August 2, 1969), p. 9.

9. "State Aid to Private Higher Education," A Staff Report to the Coordinating Council for Higher Education, State of California (December 1969), reproduced.

SUMMARY

It is useful to summarize briefly the arrangements of the states for supporting independent higher education. While scholarship aid has been the most extensive form of assistance to date (i.e., subsidy to the demand side of the market), various states seem to be increasingly moving towards subsidizing the supply (or more specifically institutional) side of the market for higher education. This trend is occurring despite the fact that all states except Maryland, Pennsylvania, and Vermont have constitutional provisions forbidding direct legislative appropriation of tax funds to institutions of higher education that are privately controlled. On both sides of the market subsidies are growing in size and number at a rapid rate (of the 23 state scholarship programs existing in 1968 only 10 existed even on very limited scales in 1961). Finally, as of June, 1969, 39 states offered some form of financial assistance to private higher education.

Chapter 4

ENROLLMENTS, COSTS, AND ENROLLMENT BEHAVIOR

Before applying a market analysis to alternate arrangements for stimulating enrollments at the independent colleges and universities in the State of California, it is useful to discuss both enrollments and costs. The purposes of this chapter are (1) to examine the enrollments in the independent institutions in relation to total State higher educational enrollments; (2) to explore the quality and usefulness of cost data for purposes of this study; and (3) to discuss the independent (AICCU member) institutions in the light of a market analysis for enrollments.

ENROLLMENTS IN CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION

In order to place the subsequent analysis in context, it is useful to discuss enrollment trends and projections for the State.[1] The distribution of total enrollment in the State's institutions of higher education for the last decade are shown in Table 4.1. Over this period total enrollments more than doubled from about 450,000 to 975,000 students. The share of students enrolled by the AICCU member institutions (the independent colleges and universities) declined from about 13 percent to 10 percent of total enrollments, even though AICCU enrollments escalated from about 58,000 students in

TABLE 4.1

DISTRIBUTION OF TOTAL ENROLLMENT IN HIGHER EDUCATION IN CALIFORNIA BY SEGMENT, 1959-60 TO 1968-69*

Academic Year (Fall Semester)	University of California		California State Colleges		Public Junior Colleges		AICCU Institutions		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
1959-1960	44,860	10.0%	88,082	19.6%	257,821	57.4%	58,456	13.0%	449,219	100.0%
1960-1961	49,719	10.0	95,081	19.1	289,998	58.4	62,002	12.5	496,800	100.0
1961-1962	54,265	10.2	105,858	20.0	305,201	57.5	65,149	12.3	530,473	100.0
1962-1963	58,616	10.1	118,057	20.3	336,704	57.7	69,168	11.9	582,545	100.0
1963-1964	64,504	10.1	133,108	20.9	368,008	57.6	72,590	11.4	638,210	100.0
1964-1965	71,267	10.1	148,796	21.0	411,338	58.2	75,407	10.7	706,808	100.0
1965-1966	79,437	10.3	154,887	20.0	459,400	59.4	80,107	10.3	773,831	100.0
1966-1967	86,406	10.4	169,520	20.5	487,458	59.0	83,426	10.1	826,810	100.0
1967-1968	95,376	10.7	185,601	20.8	521,695	58.3	90,797	10.2	893,469	100.0
1968-1969*	98,781	10.1	211,600	21.7	567,749	58.2	97,141	10.0	975,271	100.0

* Estimated.

SOURCE: The Challenge of Achievement, p. 31

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[1] Extensive analysis of enrollments is found for the public institutions in The Challenge of Achievement, pp. 30-32. For the independent institutions see, A Statistical Profile of Independent Higher Education in California.

1959-60 to an estimated 97,000 students in 1968-69.[2]

Table 4.2 shows the distribution of full time enrollments for the same categories of institutions. Using only full-time students as a criterion, enrollment growth for the State is even more pronounced with a rise from 223,000 students at the beginning of the period to some 538,000 full-time students just ten years later. By this measure the independent institutions show a slightly larger share of enrollments than when the total number of students is used as a base. Again, the AICCU member institutions showed a decline in the proportion of State enrollments in higher education even though they experienced a substantial increase in the numbers of students whom they serviced, from 40,531 to 70,965 students in the ten year period.

It is obvious from these tables that while enrollments in the independent institutions grew at a vigorous pace over the last decade, public enrollments grew even more rapidly. The average annual rate of enrollment growth of AICCU member institutions was about 5 percent a year for the 1956-57 to 1966-67 period while it averaged about 9.6 percent a year for the public institutions over the 1959-60 to 1968-69 decade.[3] Table 4.3 shows the annual rate of growth for the different groups of public institutions. Disaggregation of growth rates by groups of independent institutions are displayed in a later section.

TABLE 4.2

DISTRIBUTION OF FULL-TIME ENROLLMENT IN HIGHER EDUCATION IN CALIFORNIA BY SEGMENT, 1959-60 TO 1968-69*

Academic Year (Fall Semester)	University of California		California State Colleges		Public Junior Colleges		AICCU Institutions		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
1959-1960	42,386	19.0%	49,711	22.3%	90,254	40.5%	40,531	18.2%	222,882	100.0%
1960-1961	46,801	19.1	56,480	23.0	99,783	40.6	42,537	17.3	245,601	100.0
1961-1962	51,340	18.8	64,099	23.5	112,638	41.3	44,572	16.4	272,649	100.0
1962-1963	55,775	18.9	71,502	24.2	121,283	41.0	47,115	15.9	295,675	100.0
1963-1964	61,073	19.1	80,188	25.0	128,221	40.0	51,102	15.9	320,584	100.0
1964-1965	67,070	18.3	92,454	25.3	152,401	41.7	53,844	14.7	365,769	100.0
1965-1966	75,743	17.9	98,840	23.4	188,874	44.7	58,931	14.0	422,388	100.0
1966-1967	82,585	18.2	110,274	24.3	198,135	43.7	62,447	13.8	453,441	100.0
1967-1968	91,741	18.6	122,426	24.8	213,496	43.2	66,232	13.4	493,895	100.0
1968-1969	93,825	17.4	139,600	25.9	233,710	43.5	70,965	13.2	538,100	100.0

*SOURCE: The Challenge of Achievement, p. 31.

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[2] The AICCU institutions account for 23 percent of total enrollment for the four year colleges, that is, when the public junior colleges are excluded from the enrollment base.

[3] See A Statistical Profile of Independent Higher Education, p. 7.

TABLE 4.3

ANNUAL RATE OF ENROLLMENT GROWTH, PUBLIC SEGMENTS, 1959-60 THROUGH 1968-69*

	University of California	California State Colleges	Junior Colleges	All Three Segments
1959-60	3.6%	8.8%	1.2%	3.2%
1960-61	10.5	12.7	9.7	10.5
1961-62	9.5	11.6	10.5	10.6
1962-63	8.1	12.1	6.7	8.2
1963-64	10.5	11.6	14.4	13.1
5 Year Average	8.4%	11.4%	8.5%	9.1%
1964-65	10.6%	12.7%	12.9%	12.5%
1965-66	12.4	7.3	15.8	13.3
1966-67	7.2	11.8	5.7	7.3
1967-68	9.7	10.1	11.0	10.6
1968-69 (est.)	4.2	9.1	7.3	7.2
5 Year Average	8.8%	10.2%	10.5%	10.2%
10 Year Average	8.6%	10.8%	9.5%	9.6%

* UC average annual headcount, CSC average annual FTE, JC average daily attendance; regular sessions only.

*SOURCE: The Challenge of Achievement, p. 32.

The composition of enrollments between public and independent institutions seems to be following a national trend where the independent institutions are servicing a steadily diminishing share of students. Yet, in California, the disparity between the public and private rates of growth seems smaller than that of other major states. As we noted below, the California public institutions averaged an annual growth rate of 9.6 percent in recent years, while the State's independent institutions averaged about 5 percent. This yields a 2:1 growth rate in favor of the public sector. In New York State, the State's projections suggest a 4:1 rate in the direction of the public institutions,4/ while for Illinois the evidence between 1965-66 and 1967-68 suggests that its public institutions are growing at a rate that is more than four times that of its private institutions.5/

Enrollment Projections

As a consequence of present policies and trends, it is possible to project enrollments by groups of institutions. It is important that such projections be used with caution and be interpreted carefully to glean the information that they provide. Too often the origin of projections is forgotten, so that the projections themselves become goals and "self-fulfilling prophecies."

Table 4.4 shows the projected enrollments calculated to 1975-76 by the Joint Committee on Higher Education of the State Legislature.6/

4/ New York State and Private Higher Education, p. 66.
5/ Strengthening Private Higher Education in Illinois, p. 10.
6/ For a fuller discussion see The Challenge of Achievement, pp.39-43.

TABLE 4.4

PROJECTED TOTAL ENROLLMENT BY SEGMENT, 1969-70 TO 1975-76*

	University of California		California State Colleges		Junior Colleges		AICCU Institutions	
	Number	%	Number	%	Number	%	Number	%
1969-70	110,000	10.7%	226,000	21.8%	597,000	58.0%	98,000	9.5%
1970-71	115,000	10.2	256,000	22.7	655,000	58.2	100,000	8.9
1971-72	122,000	10.1	275,000	22.7	710,000	58.7	105,000	8.7
1972-73	127,000	10.0	285,000	22.4	751,000	59.1	108,000	8.5
1973-74	133,000	10.1	290,000	22.0	784,000	59.5	111,000	8.4
1974-75	138,000	10.1	296,000	21.6	823,000	60.0	114,000	8.3
1975-76	146,000	10.2	307,000	21.5	858,000	60.0	119,000	8.3

SOURCE: *The Challenge of Achievement*, p. 39.

These projections reflect the generally higher enrollment growth rates of the public institutions *vis a vis* the independent ones. The enrollments of the AICCU member institutions, then, are expected to fall from 9.5 percent of the total in 1969-70 to 8.3 percent in 1975-76. But the Report from which these data are taken state emphatically that these estimates are based on "...expectations as to the share of the total market each segment will serve if current policies are continued."

Clearly, it is the province of this study to examine other policies that might either stabilize the share of enrollments accounted for by the independent institutions or, at the very least, increase their absolute number beyond those projected on the basis of current policies. In addition, this goal must be attained at lower cost to the State than that attributable to similar enrollment increases in the public institutions. The next section examines the potential usefulness of cost data in making this assessment.

THE USEFULNESS OF COST DATA IN THIS ANALYSIS

Using the market approach, increases in enrollment are engendered by offering subsidies on the supply side or the demand side of the market for independent higher education. In general, the larger the size of the subsidy, the greater will be the effect on enrollments. If the State of California wished to increase enrollments at the independent institutions at less cost per enrollee than the State is presently paying in the public ones, a simple decision-rule follows: The State can simply mandate that per-student subsidies for independent higher education will be lower than those for the public colleges and universities. For example, if the decision is made to expand scholarships, then no scholarship will exceed the State contribution per-student at a comparable public institution. Direct subsidies to the institutions can be analyzed similarly on the basis of the enrollment expansion that they provide over some reasonable time horizon. For example, if capital construction grants to an institution enable an increase of 1,000 enrollments by providing classroom space and facilities, the State might calculate the cost of the subsidy per new enrollee distributed over the expected life of the new buildings. That is, if such facilities were to last thirty years, then the State should calculate its per-student cost on the basis of a thirty year flow of benefits. A similar approach can be taken for combination-type grants. This rationale will be explained more fully in Chapter 5.

On the other hand, the question is raised: "Do dollar expenditures in one group of institutions purchase more higher educational enrollments of a given quality than do dollar expenditures in the other?" That is, are dollars spent as efficiently in the public institutions as in the independent ones, or vice versa? If differences in efficiency do exist, then equal dollar expenditures would buy less education in one group than in another.

Under an ideal set of conditions, cost data for the two sets of institutions could be examined and compared; and from this process conclusions could be drawn regarding efficiency. For purposes of this study we have examined the abundance of cost information available on both public and independent institutions.7/ Since the data were not comparable because of differences in measures of student enrollments, expenditure categories, and income categories, we adjusted some of the data so that attempts at comparison might be made. The tables that were derived are included in the appendix to this chapter.

Table 4-A in the appendix displays estimates of total expenditures for both public and independent institutions classified by expenditure category. The classification groups among the independent institutions are those set out by the AICCU.8/ Table 4-B in the appendix presents estimates of income, by source, for the same categories of public and independent institutions.

7/ Basic cost data are derived for the public institutions from "Cost-Per-Student Computations in California Public Higher Education," A Staff Report for Presentation to the State of California, Coordinating Council for Higher Education, 68-1, (February 20, 1968); mimeo; and The Challenge of Achievement, pp. 23-27. For the independent institutions see A Statistical Profile of Independent Higher Education in California, A Report to the Joint Committee on Higher Education of the California State Legislature by AICCU (August 15, 1968).

8/ See "A Statistical Profile of Independent Higher Education in California", pp. 3-5. These groups are described in the next section of this chapter.

Tables 4-C and 4-D calculate income and expenditure for full-time equivalent students. That is, they use a student enrollment base that is adjusted for the number of student units undertaken at each level, graduate or undergraduate. The purpose of this adjustment is to correct for differences in the part-time/full-time and graduate/undergraduate compositions of enrollments among the groups of institutions. Table 4-C shows the expenditures of California institutions of higher education per full-time equivalent student and 4-D shows the income per full-time equivalent student.

These data are presented in the appendix, but they are not utilized in this analysis. That is, after examining the cost information on public and independent institutions and after making adjustment on them to achieve closer comparability, we believe that they are still not useful for purposes of comparison. More specifically, they suffer from two serious deficiencies that make them all but useless for carrying out any meaningful comparative cost analysis. First, the cost data themselves are subject to large errors and inconsistencies due to the different bases on which they were collected by the different institutions as well as by accounting practices which are not appropriate for obtaining true costs; and second, differences in the quality and nature of output are not considered in the computations.

Even in the public sector where recent efforts have been made to relate costs to programs, the measurement problems are severe. One major reason for these difficulties is that the standard line-item budget expenditure categories relate to traditional administrative classifications rather than program ones. The result is that any attempt to identify the costs of particular programs (e.g., undergraduate instruction in the humanities and sciences or even undergraduate instruction _per se_) is beset with all kinds of arbitrary judgments. How are library and research costs to be allocated among programs? Even when such data are computed in as uniform a manner as is presently possible it is stipulated that they are not directly comparable among different groups of public institutions.[9]

If this is true among groups of public institutions where uniformity has been pressed by the State, the situation is even worse among the independent institutions. None of the independent colleges and universities follow the State's accounting procedures, and it is doubtful that uniformity among autonomous independent institutions approximates that for the State.[10]

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[9] See "Cost-Per-Student Computations in California Public Higher Education," pp. 1-4.

In addition to the uniformity problem, substantial errors in comparing costs are introduced through the method by which capital costs are accounted. Theoretically, capital costs for any accounting period are determined by the value of services received from capital plant and equipment during that period. This can be computed by adding the amount of depreciation and foregone interest on the stock of physical capital or it can be approximated by imputing the rental value for such services. The point is that the true capital cost is only the flow of services received from capital facilities during an accounting period, for example, an academic year.

As an example, assume that a classroom building is constructed that has an expected life of thirty years. During a one-year period only one-thirtieth of the building should be charged to the students attending the institution in any given year. Instead, the colleges and universities charge off as capital costs in each accounting period the full capital outlay despite the fact that services from this outlay are received for many years. Thus, capital costs per student are vastly overstated for the years in which outlays are made and vastly understated or even omitted in subsequent years. True cost accounting would measure the value of capital services for each accounting period rather than just the total capital outlay (when payment is made).

This overstatement of capital costs is greatest for institutions that are expanding rapidly since they are charging off to present per-student costs those expenditures which will benefit primary future students. Conversely, they understate most the per-student costs of those institutions whose capital facilities were built in the past since such costs are not attributed to the present student body. Accurate estimates of the true capital cost per student are not available under the present set of accounting procedures.

Yet, even if the data were more reliable, they would still prevent comparability since the costs have not been incurred for comparable outputs. Clearly, institutions of higher education have different program compositions which obviate simple cost comparisons. That graduate students are more expensive than undergraduates is widely recognized. Yet, many institutions have the predominant share of their graduate students in fifth year education credential programs, ones which tend to cost the institutions less per unit of graduate credit than do undergraduate programs in the humanities, social sciences, and physical sciences. There are enormous cost differentials among the different major areas of study at both the professional, graduate school, and undergraduate levels.

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[10] The AICCU states in its recent statistical compendium that: "In compiling data for the eleven year period individual institutions were guided by a uniform, well-established set of definitions for the great majority of the items in the questionnaire. Therefore, it is believed that for most of the data presented in this report there is a good degree of internal reliability and comparability among institutions." See, A Statistical Profile of Independent Higher Education in California, p. 6. Unfortunately no supporting evidence is provided, and a spot check of financial officers at several of the independent institutions indicated skepticism with any claim of strict uniformity in interpretation and accounting procedures among such institutions.

Differences in quality also obviate our ability to compare meaningfully per-student costs among institutions. No one believes that all programs -- even narrowly defined -- are equally good. For example, it is widely recognized that a B.A. in Political Science or a Ph.D. in Theoretical Physics is not of homogeneous quality among all institutions of higher education. To the contrary, wide differences in institutional quality are believed to exist. First-rate faculty are considerably more costly to the colleges and universities than are faculty with lesser accomplishments. Likewise, equipment for high-quality programs in the sciences is expensive; and low student-faculty ratios are also a costly investment. Yet, all of these are viewed as inputs that raise the quality of the educational process even though they will be reflected in higher costs-per-student. Without adjustments for the quality of the educational process, comparisons of per-student costs lack substance even if the cost data themselves were accurate.

Given the fact that present cost data are insufficient to make meaningful comparisons of efficiency among institutions, what are the most reasonable efficiency assumptions that can be made? The most reasonable assumption is that there is little basis for significant differences in efficiency between the public and independent institutions. There are two reasons for this assumption.

First, the underlying technology used in the educational production process is the same between both groups of institutions. Indeed, comparable institutions in both groups emulate the production process of the other. Faculty, students, staff, buildings, and equipment are used in similar ways in both cases to produce educational services. There are no clear-cut differences in technology.

Second, in the main, both groups of institutions compete in the same marketplace for faculty and other resources. That is, the cost to comparable institutions in the public and private sector of attracting faculty of a given caliber are likely to be similar. On the same basis, capital costs for the same inputs are not likely to vary and so on. For these two reasons it is difficult to assume *a priori* that there are significant differences in output per dollar between the public and independent institutions.

A DESCRIPTION AND ANALYSIS OF THE INDEPENDENT INSTITUTIONS

In Chapter 2 we viewed the market for independent higher education as a single entity for which there was a single demand and a single supply schedule at any one time. Underlying this approach, however, there are as many supply and demand curves as there are institutions. That is, each independent college and university has a unique supply schedule and faces a unique demand schedule for its services. For purposes of analysis though, the single market and the "as many markets as there are institutions" approaches are polar cases. The most useful approach is that of stratifying institutions into reasonably homogeneous groups based upon the demand for their services and their supply behavior. Then we can generalize on the effects of subsidies to both supply and demand for groups of institutions classified according to the markets in which they operate.

The Association of Independent California Colleges and Universities has classified its membership into several groups, ones that are applicable to the present analysis with limited modifications.11/ What follows is a description of the institutions with a discussion of those characteristics that relate to this study.

Table 4.5 shows the AICCU classification of institutions. The Group I institutions tend to have very diverse curricula and the most extensive graduate programs. Group II institutions are somewhat less diverse and have higher proportions of undergraduates (with the anomalous exception of Claremont University Center whose enrollments are all at the graduate level). Group III generally comprises the highly selective, small liberal arts colleges, while Group IV includes less selective ones, most of them religiously affiliated. Group V colleges also seem to fit in this latter category.

Table 4.6 displays information on the particular colleges and universities within each group for the 1966-67 academic year. Data on enrollments are for full-time equivalent students in order to correct for differences in the proportions of part-time students. While these data are useful for a capsule description they are already three years old, so the numbers should not be considered to represent the present situation although the pattern represented by the data is quite accurate. Tuition and fees have risen

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11/ For an explanation of the AICCU groups see _A Statistical Profile in California_, p. 4. While the institutions fall into six groups, Group VI will not be discussed in this report because there are few data available on its 3 member institutions. Not all independent colleges in California are members of the AICCU.

TABLE 4.5

AICCU CLASSIFICATION OF INSTITUTIONS*

Group	No. in Group	Type of Institution	Curriculum
I	3	University & Institute	Widely diverse
II	6	University	Diverse
III	9	College	Liberal arts
IV	15	College	Liberal arts, religious orientation
V	6	College	Liberal arts, religious orientation

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*SOURCE: A Statistical Profile of Independent Higher Education in California, p. 4. Membership changes in the recent past are not included in this table and do not affect appreciably the subsequent analysis. United States International University (formerly Cal. Western) has been added to Group II; California College of Arts and Crafts has been added to Group IV; Pacific Oaks College is a new member of V; and San Francisco Art Institute has been added to Group VI. San Luis Rey College is no longer a member.

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substantially for some institutions as illustrated by Stanford (about $1,600 in 1966-67 to over $2,100 in 1969-70), University of Santa Clara (about $1,300 in 1966-67 to over $1,700 in 1968-69), Pomona $1,600 to $2,100, and Chapman College ($1,200 in 1966-67 to $1,500 in 1969-70).

TABLE 4.6

INDEPENDENT COLLEGES AND UNIVERSITIES IN CALIFORNIA, 1966-67 (BY AICCU GROUP)

	Enrollment (FTE)	Oper.cost per stud.	Tuition	M/F/Coed	Religious Affiliation	% Undergraduate
GROUP I						
Calif. Inst. of Tech.	1,479	6,089	1,800	ungrad-M grad-coed	none	39
Stanford Univ.	10,603	3,686	1,575	coed	none	41
Univ. of South.Calif.	13,521	2,864	1,500	coed	none	40
GROUP II						
Claremont Univ. Center	551	3,635	1,200	coed	none	0
Loma Linda Univ.	2,659	2,439	1,158 (Loma Linda) 1,084 (La Sierra)	coed	7th Day Adventist	61
Loyola Univ.	2,113	1,909	1,250	M	Catholic	64
Univ. of the Pacific	2,725	2,066	1,564	coed	Methodist	77
Univ. of San Francisco	4,673	1,112	1,072	coed	Catholic	82
Univ. of Santa Clara	3,556	2,080 (ungrad)	1,311 (ungrad)	coed	Catholic	64
GROUP III						
Claremont Men's College	677	2,435	1,500	M	none	100
Harvey Mudd College	284	5,380	1,500	coed	none	100
Mills College	765	3,401	1,600	F	none	86
Occidental College	1,629	2,352	1,650	coed	United Presbyt.	94
Pitzer College	482	2,478	1,600	F	none	100
Pomona College	1,253	3,304	1,600	coed	none	100
Scripps College	438	3,330	1,550	F	none	100
Univ. of Redlands	1,541	2,045	1,350	coed	American Baptist	79
Whittier College	1,947	1,683	1,260	coed	Society of Friends	83

TABLE 4.6 (cont'd)

	Enroll-ment (FTE)	Oper.cost per stud.	Tuition	M/F/Coed	Religious Affilia-tion	% Under-graduate
GROUP IV						
Biola College	1,253	1,611	800	coed	Protestant nondenom.	100
California Lutheran Col.	873	2,324	1,300	coed	American Lutheran	100
Chapman College	979	2,009	1,200	coed	Dis.of Christ	62
College of Notre Dame	425	1,733	800	F	Catholic	100
Dominican Col. of San Rafael	603	1,658	850	F	Catholic	90
LaVerne College	593	1,564	1,200	coed	Church of the Brethren	95
Marymount Col.	354	1,300	1,150	coed	Independent	100
Mount St.Mary's College	1,188	1,175	1,000	F	Catholic	80
Pasadena Col.	1,124	1,527	960	coed	Church of the Nazarene	52
Pepperdine Col.	1,270	2,372	1,575	coed	Independent	74
St. Mary's Col. of California	928	1,830	1,100	M	Catholic	100
Univ.of SanDiego Col. for Men	464	1,632	900	M	Catholic	100
Univ.of SanDiego Col.for Women	503	1,190	1,000	F	Catholic	92
Westmont College	691	1,535	1,260	coed	none	100
Immaculate Heart College	721	2,528	1,070	F	Catholic	74
Menlo College	510	1,434	1,400	M	none	100
San Francisco Col.for Women	458	1,200		F	Catholic	100
GROUP V						
Azusa Pacific College	767	1,845	950	coed	Interdenominational	100
Calif. Baptist College	535	1,114	850	coed	Calif. Baptist	100
College of Holy Names	735	1,344	700	F	Catholic	91
Pacific College	232	1,522	760	coed	Mennonite	100
San Luis Rey Col.	95	2,239	700	M	Catholic	100
Southern Calif. College	472	1,222	750	coed	Assemblies of God	100
Pacific Union College	1,468	1,370	1,155	coed	7th Day Adventist	92
St. Patrick's College	174	2,244	500	M	Catholic	100

SOURCE: Directory of the Association of Independent California Colleges and Universities

The Several Markets for Independent Higher Education

Because the various independent institutions have different missions and cater to different groups of students, they will not respond identically to the same subsidy arrangements. Indeed, the fact that student composition may vary considerably from institution to institution suggests that it is unrealistic to view a single market for independent higher education. That is, while some youngsters are potential students at one type of school they are not potential enrollees at other types. Differences in tastes, scholastic backgrounds, and so on lead to differences in the types of institutions that students will consider for their higher educational careers.

The purpose of this section is to classify the independent institutions according to the student markets that they serve. Once this is done we can consider the kinds of institutions that comprise the supply side of each market and the students who comprise the demand side. Finally, we can assess the enrollment behaviors in each market when subsidies are presented by the State to institutions and to students.

In our view, the best single way to know which undergraduate market a college is participating in is to view the average qualifications of the student body. Institutions select students according to particular admissions criteria, and students who do not meet these criteria are not potential enrollees. Moreover, it appears that students too seek entrance to schools on the basis of perceived quality, and quality in this sense seems to be a direct function of the quality of the student body.[12] Accordingly, we have examined the Scholastic Achievement Test scores of entering freshman for 1968-69 at both the independent and the public colleges and universities.

Table 4.7 shows the average SAT scores by institution for the AICCU members, the University of California, and the California State Colleges. Using the SAT criterion the various AICCU groupings of institutions show substantial similarities within each group in the quality of their undergraduate enrollments. Yet, there are several inconsistencies evident.

Clearly, the University of Southern California draws from a distinctly different undergraduate cohort than does California Institute of Technology and Stanford, the other two institutions in Group I. The average SAT score of entering freshman at the latter two institutions is a prodigious 150 points higher than the average for USC. Accordingly, the University of Southern California must be viewed as operating in a different market than Stanford and Cal. Tech, and for purposes of analysis USC is placed in the Group

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12/ See James Cass and Max Birnbaum, Comparative Guide to American Colleges 1970-1971 Edition (New York: Harper and Row, 1969), p. xix.

TABLE 4.7

AVERAGE SCHOLASTIC ACHIEVEMENT TEST SCORES (SAT) OF ENTERING FRESHMEN, 1968-69*

AICCU Institutions

		Verbal	Math
GROUP I			
California Institute of Technology		683	763
Stanford University[a]		690	710
University of Southern California		545	576
GROUP II			
Claremont University Center		Not applicable	
Loma Linda University		445	446
Loyola University		535	565
University of the Pacific		570	560
University of San Francisco		531	539
University of Santa Clara		549	560
GROUP III			
Claremont Mens College		600	640
Harvey Mudd College		640	700+
Mills College		597	580
Occidental College		635	640
Pitzer College		580	560
Pomona College		675	684
Scripps College		608	562
Redlands College		590	585
Whittier College		530	510
GROUP IV			
Biola College		500	475
California Lutheran		470	483
Chapman College[a]	(M)	470	520
	(F)	524	493
College of Notre Dame		500	445
Dominican College		Not listed	
La Verne College		471	487
Marymount College		550	500
Mt. St. Mary's College		511	498
Pasadena College		Not listed	
Pepperdine College		Not listed	
St. Mary's College		525	535
University of San Diego College for Men		505	511
University of San Diego College for Women		506	478

TABLE 4.7 (cont'd)

		Verbal	Math
Westmont		524	539
Immaculate Heart		528	482
San Francisco College for Women		464	457
Menlo College		Not listed	
GROUP V			
Azusa Pacific College[b]	(ACT)	19.2	17.5
California Baptist College		Not listed	
College of Holy Names		549	499
Pacific College		468	474
San Luis Rey College		Not listed	
Southern California College		Not listed	
Pacific Union College		Not listed	
St. Patrick's College		Not listed	
University of California			
Berkeley		569	603
Davis		Not listed	
Irvine		Not listed	
Los Angeles (UCLA)		Not listed	
Riverside	(M)	527	572
	(F)	534	521
San Diego		Not listed	
Santa Barbara		562	578
Santa Cruz		631	623
California State Colleges			
Dominguez Hills		524	540
Fullerton		518	536
Hayward[b]	(ACT)	22.5	21.4
Long Beach[b]	(ACT)	22.2	21.3
Los Angeles		Not listed	
San Bernardino[b]	(ACT)	22.6	20.4
Cal. Poly-Kellogg/Voorhis[b]	(ACT)	22.7	22.7
Cal. Poly-San Luis Obispo		470	525
Chico State[b]	(ACT)	22.0	20.8
Fresno State		Not listed	
Humboldt State		498	530
Sacramento State		Not listed	
San Diego State		Not listed	
San Fernando Valley State	(M)	490	536
	(F)	490	478
San Francisco State[b]		530-39	520-29
	(ACT)	23	23

TABLE 4.7 (cont'd)

		Verbal	Math
San Jose State		507	520
Sonoma State[b]	(ACT)	22.1	20.7
Stanislaus State		478	492

*SOURCE: James Cass and Max Birnbaum, Comparative Guide to American Colleges, 1970-1971 Edition (New York: Harper and Row, 1969).

NOTES: [a] Since SAT data published for Stanford University and Chapman College were medians, they were adjusted to approximate arithmetic means for comparability with other institutions.

[b] ACT scores presented under verbal are composites.

II market. The two institutions remaining in Group I show SAT scores over 680 suggesting that their enrollments are drawn -- on the average -- from the top three percent of those who take the college entrance tests.

While the SAT scores of entering freshmen in the Group II institutions are not in this rarified range, they are considerably above average. If we relegate Loma Linda to Group IV or V because of its significantly lower SAT's, do not consider the Claremont University Center which enrolls no undergraduates; and add the University of Southern California to the remaining four Group II institutions, we have a market of five institutions whose students' average scores are in the 550 range with a fairly narrow band of variation about this mean.13/

The Group III institutions approach relative homogeneity in the SAT scores of their students. (Whittier College is the only exception with SAT scores 70 points or so below those of the other Group III institutions.) These institutions are considered to be small liberal arts colleges that vary from better-than-average to nationally prestigious. The performance of their entering freshmen on the Scholastic Aptitude Test is in the 600 range, a level that is between the two institutions that comprise the adjusted Group I category and the five institutions in the adjusted Group II class.

13/ These groups have been reconstituted for purposes of this analysis only. They may not be entirely suitable for other applications.

Group IV institutions tend to be small religiously oriented ones with great variability. SAT scores of entering freshmen average about 500, although they range between 450 and 550. The information derived for Group V suggests that Group IV and V institutions can be lumped together for purposes of this analysis. By the SAT criterion, Loma Linda University also belongs in this group.

From the available data collected on the University of California, it appears that the average SAT scores for entering freshmen are in the 575 range. This would make these institutions competitive for students from the upper part of the Group II spectrum and the lower part of Group III. The University of California also competes somewhat less directly and to a limited extent with Stanford and the California Institute of Technology, but it appears that the SAT scores of these latter two independent schools are about 100 points higher on the average.

While the California State Colleges, too, show substantial variability, the SAT scores of their entering freshmen appear to be in the 520 range. Thus, these institutions appear to compete with the lower portion of the Group II spectrum and the upper portion of the Group IV and V institutions.

Indeed, for purposes of a market analysis we can establish three groups of institutions.

Market A - composed of the most selective institutions competing to a limited degree with the University of California. These include the Group III institutions and a modified Group I (without USC).

Market B - composed of institutions with student quality significantly above average and competing to a substantial degree with the California State Colleges. These include the Group II institutions with the addition of the University of Southern California and the deletion of Claremont University Center and Loma Linda from the Group.

Market C - composed of institutions whose student quality is in the average to slightly above-average range and competing to a substantial degree with the California State Colleges in the upper range and the junior colleges in the lower range. These include the Group IV and V institutions with the addition of Loma Linda University.

For conceptual purposes this classification into three distinct markets is valuable. Nevertheless, a word of interpretation is in order. The characteristics that describe each market are average ones, and they should be viewed as ones which represent important foci for our present purposes. While the three markets differ substantially on the average, it is reasonable to believe that there is some overlap with regard to both institutional characteristics and student characteristics among the three divisions. That is, a particular student may consider institutions in more than one market, and an institution may consider enrollees who are not typical for its market. The worth of this kind of classification scheme is dependent upon its usefulness in explaining the phenomena that we need to understand. On that basis we believe that this separation of markets is very useful.

Table 4.8 shows enrollment data for the AICCU groups. Unfortunately, we did not possess the data on individual institutions that would have enabled us to show comparable information for the modified groups in Markets A, B, and C. Nevertheless, it is clear that the institutions in Market A showed far slower rates of growth in undergraduate enrollments in recent years than Market B and C institutions. Moreover, undergraduate projected growth rates between 1968 and 1975 are smallest for Market A institutions and largest for Market C ones.[14]

Even under the present set of conditions the independent institutions have indicated plans to increase enrollments substantially. This raises an important question for subsequent evaluation of future State policies for fostering the growth of the independent colleges and universities. Surely, financial policies to stimulate enrollment increases should not be credited with the enrollment growth that would have taken place even in the absence of such subsidies. Yet, there will be severe measurement problems in attempting to separate enrollment increases stimulated by the State from those attributable to normal developmental increases.

HEURISTIC ANALYSIS OF THREE MARKETS FOR INDEPENDENT HIGHER EDUCATION IN CALIFORNIA

In this section we combine the information that is available on the characteristics of the three markets for independent higher education in California into a market assessment of the different subsidies as they relate to enrollment increases. Theoretically, we would wish to engage in an econometric study of each market in order to obtain a more precise determination of the nature of both supply

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[14] These are based upon Market A being equivalent to Group I and III; Market B comprising II; and Market C comprising IV and V. Since the University of Southern California seems to have more ambitious growth plans than the other two Group I institutions, the growth rates for Market A institutions are probably overstated.

TABLE 4.8

ENROLLMENT OF AICCU INSTITUTIONS, BY GROUP, 1966-67

ENROLLMENT	GROUP ONE	GROUP TWO	GROUP THREE	GROUP FOUR	GROUP FIVE	GROUP SIX
Total students - Not F.T.E. (1)*	29,426	20,042	9,301	14,874	2,961	--
% Undergraduates - (2)	46.8%	64.4%	93.3%	75.0%	88.9%	--
% of Total Undergraduate - Degrees Granted (3)	33%	21%	18%	21%	3%	4%
% of Total Master's Degrees Granted (4)	65%	17%	5%	10%	--	3%
% of Total Doctor's Degrees Granted (5)	74%	23%	**	1%	--	2%
Enrollment Increase as % 1957-67 (6)	39%	114%	52%	134%	110%	97%
Average Yearly Growth Rate of F.T.E. 1957-67 (7)	3.9%	9.4%	4.6%	6.2%	15.7%	10.4%
Projected Growth Rate (8)	1.9%	5.1%	3.1%	6.1%	7.6%	7.8%
Undergraduate Yearly Growth Rate 1962-67 (9)	2.5%	9.8%	4.5%	5.3%	14.2%	3.2%
Undergraduate Projected Growth Rate 1968-75 (10)	1.1%	5.2%	3.0%	6.7%	6.9%	6.6%
Graduate Yearly Growth Rate 1962-67 (11)	4.5%	16.9%	4.7%	9.2%	--	18.9%

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*Parentheticated numbers indicate source. See "Sources" which follows these data.

** Less than 0.5% of total.

TABLE 4.8 (cont'd)

	GROUP ONE	GROUP TWO	GROUP THREE	GROUP FOUR	GROUP FIVE	GROUP SIX
Graduate Projected Growth Rate 1968-73 (12)	2.4%	4.8%	4.5%	4.4%	20.8%	11.3%
Percent California Enrollees (13)	71%	84%	71%	78%	79%	73%
Projected % of California Enrollees 1968-78 (14)	71%	84%	67%	73%	74%	76%

SOURCES:

1 - A Statistical Profile of Independent Higher Education in California, A Report to the Joint Committee on Higher Education, by the Association of Independent California Colleges and Universities (August 15, 1968), pp. 8-12.

2 - *Ibid.*, pp. 8-12.

3 - Financing Independent Higher Education in California by McKinsey and Company, Inc., for the AICCU, December, 1968, Chapter 2, p. 33.

4 - *Ibid.*, Chapter 2, p. 33.

5 - *Ibid.*, Chapter 2, p. 33.

6 - *Ibid.*, Chapter 2, p. 19.

7 - *Ibid.*, p. A-5.

8 - *Ibid.*, p. A-5.

9 - *Ibid.*, p. A-6.

10 - *Ibid.*, p. A-8.

11 - *Ibid.*, p. A-6.

12 - *Ibid.*, p. A-8.

13 - AICCU Group Profiles by McKinsey and Company, Inc., for the AICCU, Chapter 1, p. 4; Chapter 2, p. 3; Chapter 3, p. 3; Chapter 4, p. 3; Chapter 5, p. 3.

14 - *Ibid.*, same pages.

and demand. In that way we might be able to obtain rather precise estimates of these effects. Unfortunately, this is a very time consuming and complex task which is quite beyond the data, finances, and time perio allotted for this study.15/ Nevertheless, the available knowledge on each of the three markets is enough to enable us to delineate those policies that are likely to be most useful in each case.

Table 4.9 summarizes the three markets for independent higher education in California. The description of each market denotes the apparent nature of both supply and demand in terms of elasticity behavior. As we recall from Chapter 2, elasticity is a measure of enrollment response to a change in price. Where a one percent reduction in net student charges results in greater than a one percent increase in enrollments demanded, the enrollments are considered to be demand elastic; if the concommitant increase in enrollments demanded is less than one percent, the enrollments are considered to be demand inelastic meaning that the demand responsiveness to a change in price is small.

Similarly, where a one percent increase in the net price received by institutions -- by virtue of subsidies -- results in a greater than one percent rise in enrollment places, enrollments are considered to be supply elastic; while a resultant increase of less than one percent characterizes supply inelasticity.

Estimates of elasticities are based upon two types of information. On the one hand, it was assumed that those institutions with the most ambitious plans for enrollment expansion are also those who would respond most to subsidies. That is, institutions who see expansion of undergraduate enrollments as a high priority goal would also seem to be the ones who would be most responsive to financial stimuli. On the other hand, those institutions that are highly satisfied with their present enrollment levels would be less likely to violate them in response to financial incentives. As Table 4.8 indicates -- according to this criterion -- Market A is characterized by a relatively low potential enrollment response, with Markets B and C characterized by much higher potential responses.

On the other hand, demand elasticities were based on the availability of suitable public alternatives for students in each market. The larger the number of good alternatives that students have, the greater will be their enrollment response to a change in price. For example, if the net price to students at independent institutions declines by virtue of subsidies, a number of students who would have enrolled in the public institutions will choose a private alternative. The larger the number of comparable public institutions and the larger the enrollment the greater will be the elasticity of demand for the services of the independent institutions.

15/ An interesting attempt at measuring private demand for the University of California is found in Stephan A. Hoenack, op.cit.

The combination of small size and high selectivity of Market A institutions suggest that there are only limited public alternatives for students in this market. That is, institutions in this market experience limited competition with some branch of the University of California, but it is not likely that price responsiveness of demand is high.

On the other hand, most Market B students have the choice of the State Colleges or the University of California or both. Accordingly, one would expect a high elasticity of demand for Market B services with decreases in student charges stimulating substantial increases in the quantity of enrollments demanded.

Finally, Market C students are in an arena where there exist good public substitutes for some students and no substitutes for others. Many Market C students are eligible for the California State Colleges and vice-versa indicating a high elasticity of demand for Market C enrollments if eligibility, alone, were the criterion. Yet, the religiously oriented nature of Market C institutions suggests that many State College enrollees would not view Market C colleges as suitable alternatives; and for the same reason many Market C students do not view the State Colleges as substitutes. Accordingly the demand for Market C institutions is characterized as elastic but not as highly elastic as the demand in Market B.

TABLE 4.9

THREE MARKETS FOR INDEPENDENT HIGHER EDUCATION IN CALIFORNIA

Market	Institutions	Supply Elasticity	Demand Elasticity
A	Groups I & III (less USC)	Highly Inelastic	Inelastic
B	Group II (plus USC, less Loma Linda)	Mildly Elastic	Very Highly Elastic
C	Groups IV & V (plus Loma Linda)	Highly Elastic	Mildly Elastic

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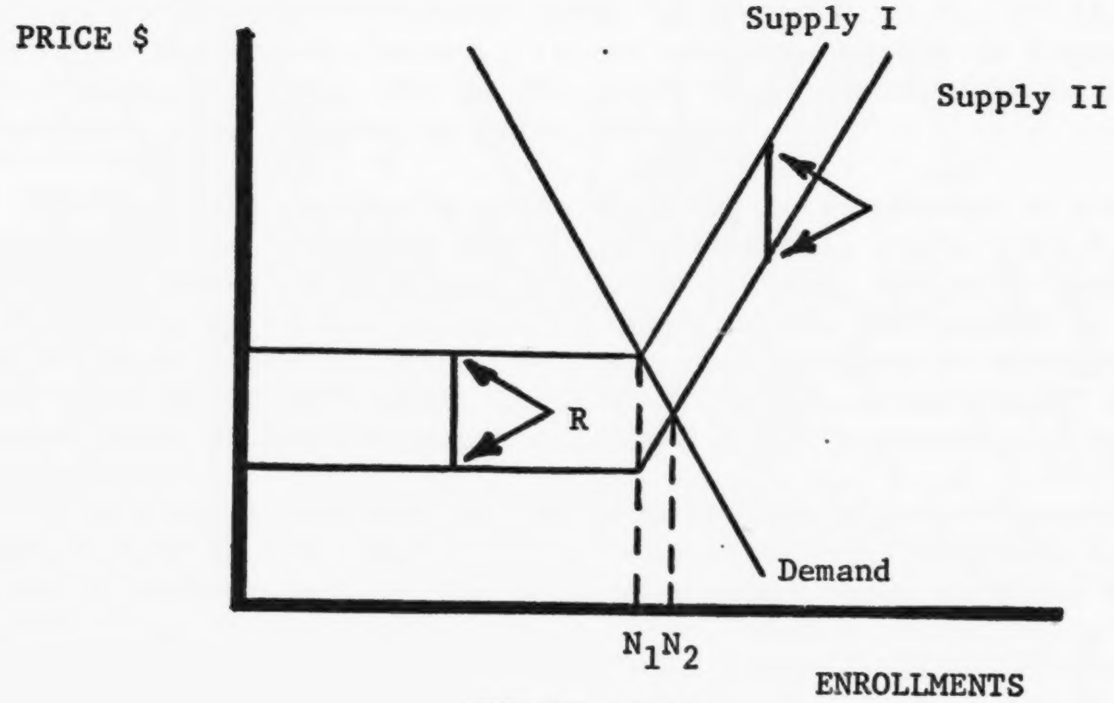
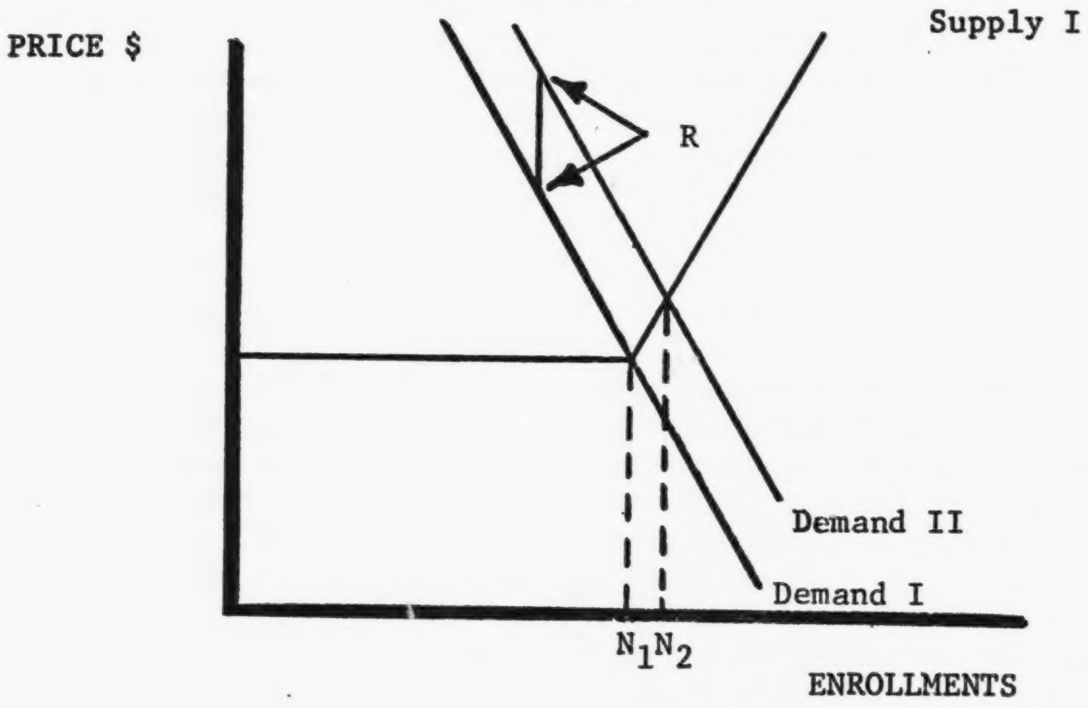
Effect of Subsidies in Market A

Figure 4.1 shows the effect on Market A enrollments of subsidies to supply and demand. The upper diagram indicates a supply subsidy while the lower diagram shows one to demand. Both diagrams reflect the elasticity conditions set out above. That is, if we


PRICE $
Supply I
Supply II
R
Demand
N_1N_2
ENROLLMENTS

SUPPLY SUBSIDY


PRICE $
Supply I
R
Demand II
Demand I
N_1N_2
ENROLLMENTS

DEMAND SUBSIDY

EFFECT ON ENROLLMENTS OF SUBSIDIES
IN MARKET A

FIGURE 4.1

define the present enrollment level in Market A as N_1, it is evident that the supply curve S_1 is not very responsive to higher prices.16/ Likewise, the demand curve D_1 is represented as being relatively unresponsive to price changes.

If a subsidy, R, is given directly to the Market A institutions for each enrollee the supply curve will shift from S_1 to S_2. This effect is shown in the upper diagram. It will intersect demand curve D_1 at a new position which can be referenced to a higher level of enrollments, N_2. But the increase in enrollments from N_1 to N_2 is very small because of the low elasticities (responsiveness of both supply and demand) in this market.

A similar analysis can be made for demand subsidies as demonstrated in the lower diagram. Here the same subsidy, R, is given to each student in the form of a scholarship shifting the demand curve to the right from D_1 to D_2. Again, enrollments in Market A increase from $N1$ to N_2, a rise that is identical to that caused by a direct subsidy to the institutions.

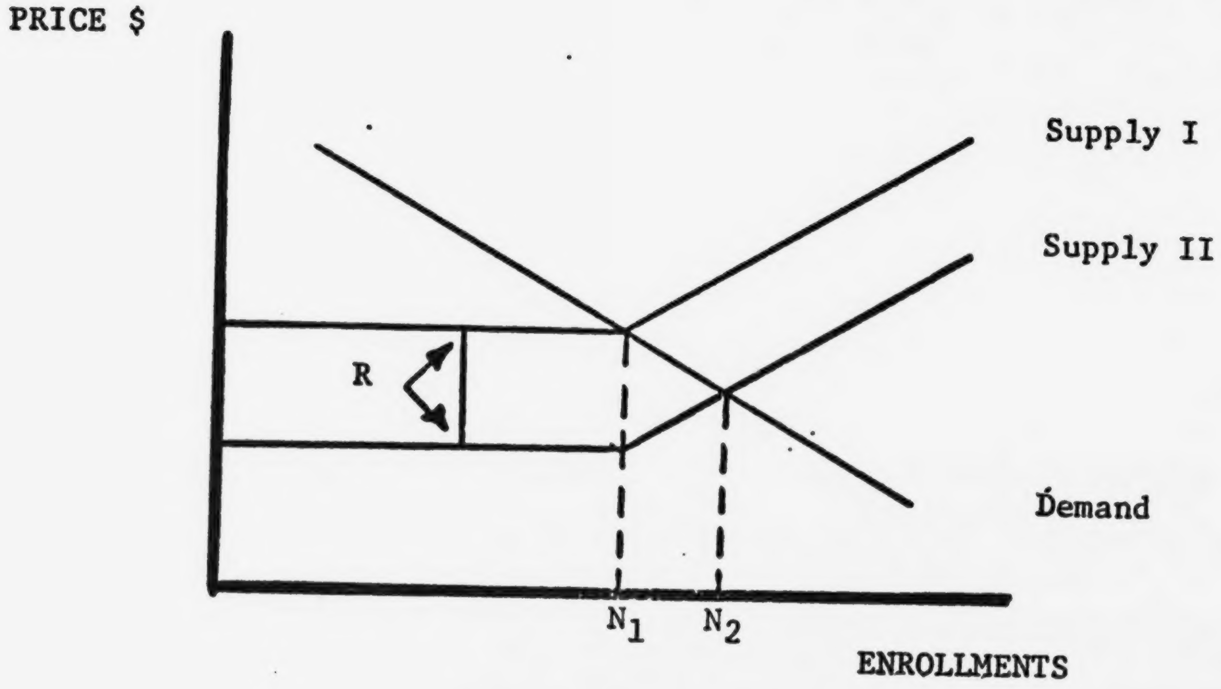
To summarize, the characteristics of Market A are such that State subsidies are likely to result only in nominal enrollment increases. A given subsidy per-student will have the same effect on enrollments whether the subsidy is given to the student or to the institution.

Effect of Subsidies in Market B

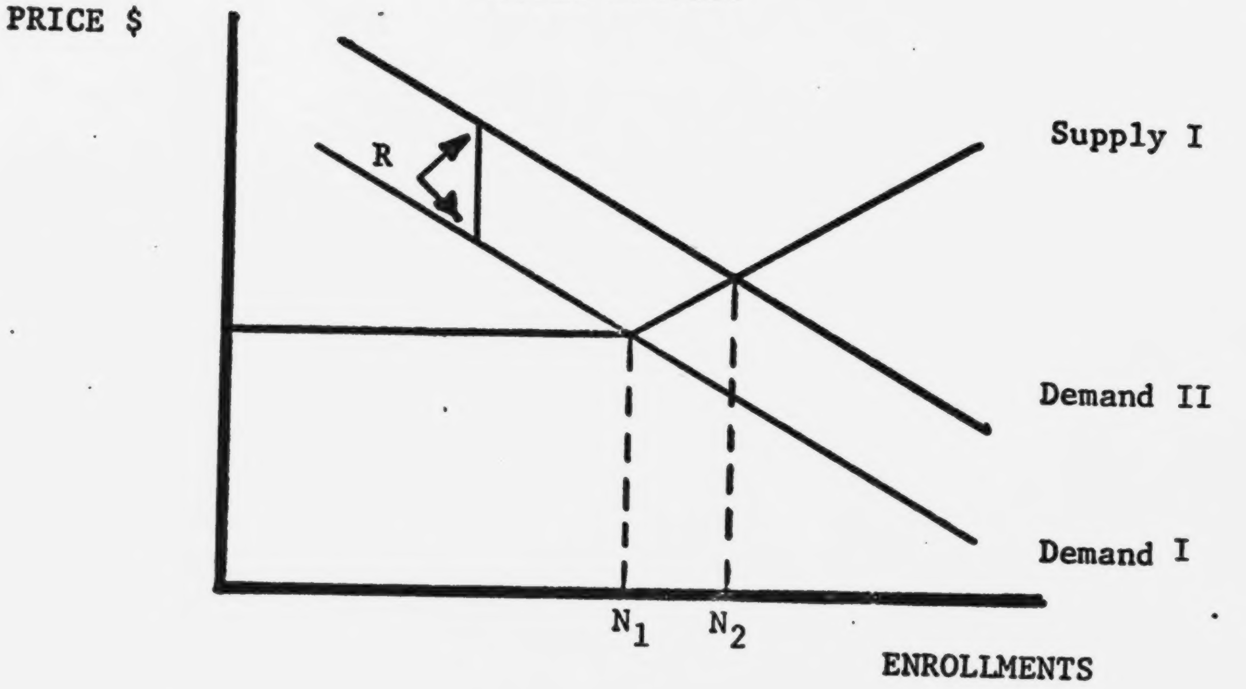
Figure 4.2 shows the effect on Market B enrollments of subsidies to supply and demand. Again, the upper diagram shows the effect of a per-student grant to institutions, while the lower one shows the effect of an equal grant to each student in the form of a scholarship. Both demand and supply curves for Market B are drawn on the basis of our previous discussion.

If a subsidy for each student, R, is given to the institutions in Market B, the supply will shift from $S1$ to S_2 and enrollments will increase from $N1$ to $N2$ as shown in the upper diagram. In this case the rise in enrollments is rather substantial due to the high responsiveness of demand and the moderate responsiveness of supply. A similar subsidy to students yields identical results.

16/ In all three markets we depict the supply curve as being horizontal at all levels of enrollment below existing enrollments, N_1. That is, in all three markets we assume that institutions will provide additional enrollments at a constant price until existing enrollment levels are reached.



SUPPLY SUBSIDY



DEMAND SUBSIDY

EFFECT ON ENROLLMENTS OF SUBSIDIES
IN MARKET B

FIGURE 4.2

If a scholarship equal to R is given to each student enrollee, the demand curve shifts from D_1 to D_2 as indicated in the lower diagram. This will stimulate a rise in enrollments from N_1 to N_2.

In summary, behavior in Market B suggests that there will be relatively large increases in enrollments for a given per-student subsidy. Following the general conclusion, the effect of a subsidy will be identical whether given to the institution directly or to students in the form of scholarships.

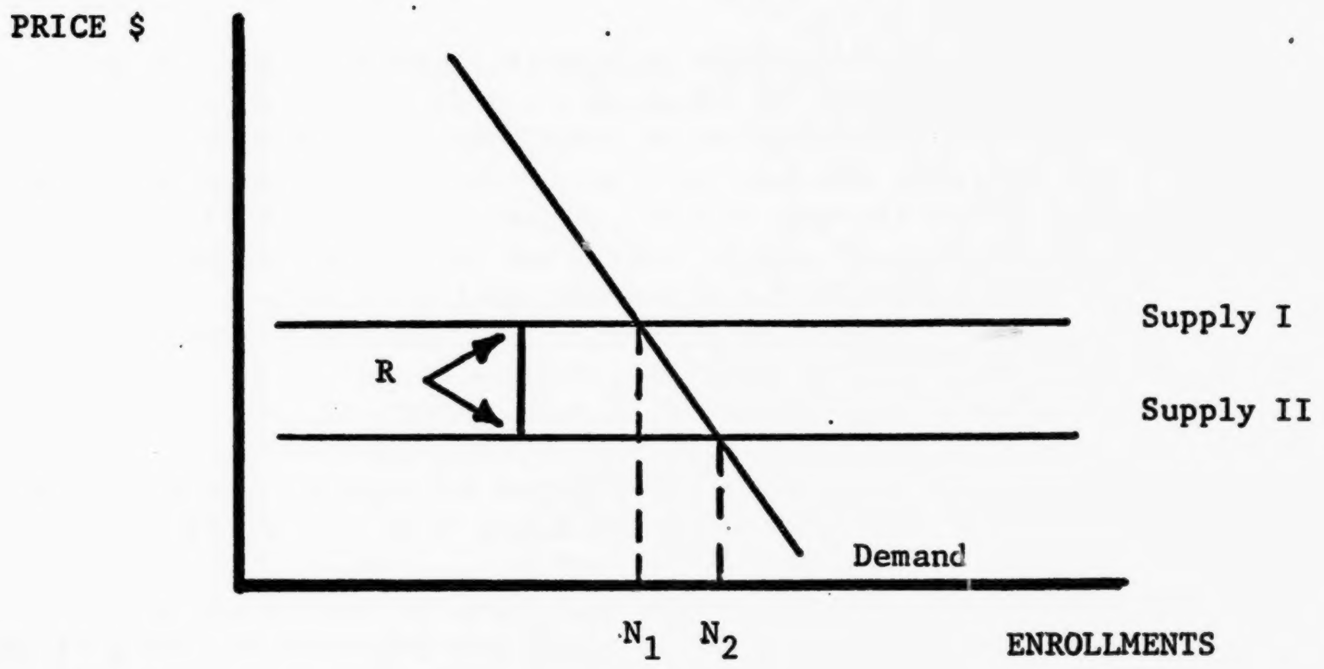
Effect of Subsidies in Market C

Figure 4.3 shows the effect on enrollments of subsidies in Market C. The supply curve is drawn perfectly horizontal to show its very high responsiveness. In fact, most of the Market C institutions could enroll far more students given their present resources; that is, they tend to be underenrolled relative to their present capacities.

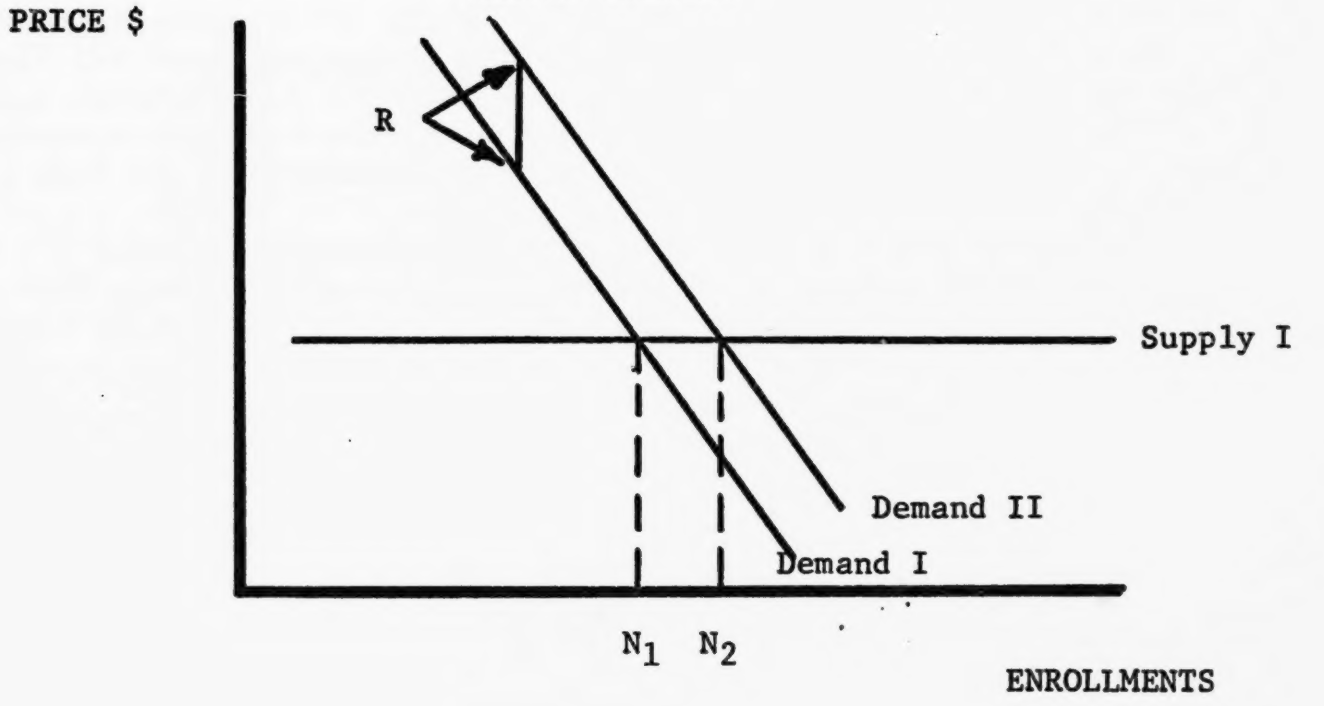
The demand curve for this market, D_1, is depicted as being somewhat less responsive to price differences than that for Market B although far more responsive than the demand schedule in Market A. The relatively lower elasticity in Market C than in B is due to the somewhat greater religious orientation and smaller size of institutions in the former market. While institutions in Market B are also church-related, their curricula and academic environments tend to be more secular than those in Market C, and their enrollments are considerably larger than those of the Market C institutions. Accordingly, there is a possibility of greater student shifting in response to changes in price differentials between Market B institutions and public ones (particularly the State Colleges) than between Market C colleges and the public institutions. This is reflected in a demand curve D_1 that is less elastic with regard to price.

Following the other figures, the upper diagram shows a per-student subsidy to the institutions in Market C. That is, the existing supply schedule S_1 is intersected by demand schedule D_1 resulting in enrollments of N_1 students. A per-student subsidy, R, is given to the institutions resulting in a shift of supply from S_1 to S_2 and a concommitant increase in enrollments from N_1 to N_2.

The lower diagram demonstrates a similar subsidy to demand. A scholarship, R, is given to each student, shifting the demand curve from D_1 to D_2. The shift in demand also increases enrollments from N_1 to N_2. Again, the rise in enrollments is identical whether the per-student subsidy is used to shift the supply of enrollment places or the demand for them.


PRICE $
R
Supply I
Supply II
Demand
N$_1$
N$_2$
ENROLLMENTS

SUPPLY SUBSIDY


PRICE $
R
Supply I
Demand II
Demand I
N$_1$
N$_2$
ENROLLMENTS

DEMAND SUBSIDY

EFFECT ON ENROLLMENTS OF SUBSIDIES
IN MARKET C

FIGURE 4.3

Summary of the Three Markets

On the basis of the information available to us, it appears that State subsidies, whether to students or institutions, would have a greater impact on enrollment in Markets B and C than in A. Subsidies in Market B (Group II institutions and USC, but not including Loma Linda or Claremont University Center) would have the effect of reducing slightly the burden of the University of California and to a greater extent that of the California State Colleges. The probable effect of subsidies in Market C would also be large, but not quite as substantial as that in B. These, the Group IV and V institutions (plus Loma Linda), would obtain students who might otherwise have gone to the State Colleges and to a lesser degree the Public Junior Colleges. The effect of per-student grants on enrollments in Market A would be minimal.

It is important to note that even when the per-student subsidy is given to institutions for additional enrollments, alone, the effect would be the same. That is, while costs to the State would be reduced by not subsidizing institutions for their initial levels of enrollments (those at N_1), a given subsidy R would still yield the same changes in enrollments described above. This becomes obvious when one considers that a subsidy for additional enrollments can be viewed as one given only for enrollments beyond N_1, that is, enrollment levels to the right of N_1.

Using the foundation constructed in the first four chapters, we will review alternative approaches to financing independent higher education in the next and final chapter.

APPENDIX

TABLE 4-A

EXPENDITURES FOR CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION: 1966-67 TOTAL BY CATEGORY

	PUBLIC		INDEPENDENT				
Shown in Thousands of Dollars	Univ. Gen'l Camp.	State Colleges	Group I	Group II	Group III	Group IV	Group V
Instructional Exp.	111,438	119,805[1]	63,500	14,300	5,770	7,580	1,610
Organizational Research & Libraries	133,723[2]	17,356[3]	68,540	5,370	1,250	1,123	243[4]
Extra Instructional Expenditure	38,579[5]	12,564[6]	2,360	1,900	606	2,780	199
Student Aid	15,861	8,973	10,500	3,400	2,140	2,240	499
Administration & General Expense	20,464[7]	13,036[8]	16,100	5,900	5,770	6,630	1,040
All other	75,447	60,951	33,100	22,730	15,364	10,247	2,239
Operating Expense	395,512	232,865	194,000	53,600	30,900	30,600	5,830
Capital Outlay	74,831[9]	113,940[9]	42,100	22,500	11,000	7,360	3,790
*Total Expenditure	470,343	346,805	236,100	76,100	41,900	37,960	9,620

*Figures may not equal totals due to rounding of numbers

APPENDIX (cont'd)

TABLE 4-B

INCOME OF CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION: 1966-67 TOTAL BY SOURCE

Shown in Thousands of Dollars	PUBLIC		INDEPENDENT				
	Univ. Gen'l Camp.	State Colleges	Group I	Group II	Group III	Group IV	Group V
Tuition & Fees	32,867	22,285	42,400	20,100	14,300	13,800	2,140
State Government	168,765	154,506	86,430[10]	4,478[10]	675[10]	636[10]	64[10]
Other Governments	116,241	26,686					
Gifts, Grants, & Endowments	16,295	1,211	32,400	7,220	7,810	6,013	1,674
All other	61,344	28,177	32,770	22,402	10,015	9,151	2,072
Operating Income	395,512	232,865	194,000	54,200	32,800	29,600	5,950
Capital Outlay Receipts	74,831[9]	113,940[9]	27,800	18,800	13,200	7,070	4,430
Total Income	470,343	346,805	221,800	73,000	46,000	36,670	10,380
Operating Income Minus Operating Expenditure	N.A.	N.A.	0	+600	+1,900	-1,000	+120

APPENDIX (cont'd)

TABLE 4-C

EXPENDITURES PER FULL-TIME EQUIVALENT STUDENT IN CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION: 1966-67 IN CURRENT DOLLARS

	PUBLIC		INDEPENDENT				
	Univ. Gen'l Camp.	State Colleges	Group I	Group II	Group III	Group IV	Group V
Full-time EQ's 1966-67	75,248[11]	132,900[11]	26,257[11]	17,518[11]	7,513[11]	9,687[11]	2,162[11]
Instructional Exp.	1,481	901	2,418	816	768	783	745
Organizational Research & Libraries	1,777	131	2,610	307	166	116	112
Extra Instructional Expenditure	513	95	90	108	81	287	92
Student Aid	211	68	400	195	285	231	231
Administration & General Expense	272	98	613	337	768	684	481
All other	1,003	459	1,261	1,298	2,045	1,058	1,036
Operating Expense	5,257	1,752	7,392	3,061	4,113	3,159	2,697
Capital Outlay	994	857	1,603	1,284	1,464	760	1,753
Total Expenditure	6,251	2,609	8,995	4,345	5,577	3,919	4,450

APPENDIX (cont'd)

TABLE 4-D

INCOME PER FULL-TIME EQUIVALENT STUDENT IN CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION: 1966-67 IN CURRENT DOLLARS

	PUBLIC		INDEPENDENT				
	Univ. Gen'l Camp.	State Colleges	Group I	Group II	Group III	Group IV	Group V
Tuition & Fees	437	168	1,615	1,147	1,903	1,425	990
State Government	2,243	1,163	3,292	256	90	14	30
Other Governments	1,545	201					
Gifts, Grants, & Endowments	217	9	1,234	412	1,040	621	774
All other	815	212	1,248	1,279	1,333	945	958
Operating Income	5,257	1,753	7,389	3,094	4,366	3,005	2,752
Capital Outlay Receipts	994	857	1,059	1,073	1,757	730	2,049
Total Income	6,251	2,609	8,448	4,167	6,123	3,735	4,801
Operating Income Minus Operating Expenditure	N.A.	N.A.	-3	+33	+253	-154	+55

APPENDIX (cont'd)

SOURCES:

A. "Cost-Per-Student Computations in California Public Higher Education," A Staff Report for Presentation to the State of California, Coordinating Council for Higher Education; 68-1 (February 20, 1968); mimeo.

B. The Challenge of Achievement, A Report on Public and Private Higher Education in California to the Joint Committee on Higher Education of the California Legislature, 1969.

C. A Statistical Profile of Independent Higher Education in California, A Report to the Joint Committee on Higher Education of the California State Legislature, By AICCU (August 15, 1968).

Tables A and B represent sources of total expenditures and income respectively for each of the seven groups of institutions. Tables C and D represent the same data per full-time equivalent student. A full-time undergraduate student is defined as one taking 15 course credits per term. A full-time graduate student is defined as one taking 9 course credits per term. (See footnote 11 for further explanation.)

FOOTNOTES:

1. Instructional expenditures for the other categories of higher education institutions include funds for "Departmental Research". No figure was indicated for the State Colleges and no similar category was found elsewhere in the financial data. (Source A, p. E-4.)

2. This figure represents the sum of funds under "Libraries" and "Organized Research". (Source A, p. D-6.)

3. This figure represents the sum of all figures entitled "Libraries". (Source A, p. E-4.)

4. No money was allocated for "Organized Reserach" in the Group V independent institutions. The figure, therefore, reflects only monies allocated for libraries. (Source C, p. 45.)

5. This figure represents the sum of funds entitled "Summer Session" and "Extension and Public Service". (Source A, p. D-6.)

6. This figure represents the sum of one-third of all funds entitled "Year Round Operations" plus the funds under "Public Service" labelled "Educational TV" and "Reimbursed Activities". (Source A, p. E-4.) It was not obvious how the category "Year Round Operations" should be allocated among the different expenditure

APPENDIX (cont'd)

classifications given the information that was readily available. Accordingly one-third of the monies in that category were allocated to "Extra Instructional Expenditure" and two-thirds were allocated to "Administration and General Expense." Because of the relatively small size of this category it is unlikely that this treatment has distorted the pattern of estimated expenditures.

7. This figure represents the sum of funds under "General Administration" and "Institutional and General". (Source A, p. D-6.)

8. This figure represents the sum of funds under "General Administration" plus two-thirds of "Year Round Operations". (Source A, p. E-4.) See footnote 6 for further elaboration of "Year Round Operations".

9. These figures were derived from Table 2.9, "Sources of Funds for Higher Education in California, 1967-68", on page 24 in Source B. That table represents data for the 1967-68 school year. The ratios of capital outlay sources to operating income, as well as the ratios of each of the sources to total operating income were calculated. On the assumption that the proportional relationship among sources would remain relatively constant for one year, the ratios were multiplied against the 1966-67 figure of total operating income for both the general campuses of the University system and the State Colleges. The purpose of this calculation was that of restricting all data to one period of time. The ratios thus derived are as follows:

	University general campuses	State Colleges
Tuition and fees	8.31%	9.57%
State government	42.67%	66.35%
Other governments	29.39%	11.46%
Gifts, grants, & endowments	4.12%	.52%
Capital outlay	18.92%	48.93%

10. It was necessary to collapse the two categories for the independent institutions as the requisite data for separate analyses were lacking.

11. Full-time equivalency figures were derived in a manner similar for each of the seven types of higher education institutions. For the public institutions F.T.E.'s were derived by summing all undergraduate units and dividing by 15. Graduate units were summed in like manner and divided by 9. The resulting sum of the two, graduate and undergraduate F.T.E., was defined as the F.T.E. for that group of institutions.

APPENDIX (cont'd)

Total units for the five groups of independent institutions were not classified between graduate and undergraduate levels. By assigning percentages of graduate students to each group of institutions, it was possible to make adjustments to the data to make them more nearly comparable with data from the public institutions. The procedures for deriving each F.T.E. follows:

using Group I as an example,

Total units = 307,212
Percent graduate students = 55%
X = Undergraduate F.T.E.
Y = Graduate F.T.E.
$15X + 9Y = 307{,}212$
$Y = .55(X + Y)$
$X = 11{,}816$
$Y = 14{,}441$
$X + Y = 26{,}257$ = Group I F.T.E.

Groups II through V taught the following numbers of per-term units in 1966-67, respectively: 193,992; 108,192; 139,488; and 32,424. The approximate percentages of graduate students for Groups II through V for that same year were as follows: 60%; 10%; 10% and 0%. This procedure only gives an approximation of the true figure because it does not adjust for the proportions of full-time/part-time students by level and by group of institution.

Chapter 5

ALTERNATIVE PLANS FOR STATE SUPPORT OF INDEPENDENT HIGHER EDUCATION

Introduction

The preceding chapters built a framework of analysis for exploring financial alternatives for supporting independent higher education in California. The first chapter established the goals of this study; the second one applied the theory of markets to independent higher education; the third chapter explored the arrangements of other states within the market context; and the fourth chapter analyzed the independent colleges and universities of California according to their probable market responses to subsidies. In this chapter, we discuss in greater detail the fiscal alternatives for supporting independent higher education in California. The prime focus will be on suggesting arrangements for increasing enrollments in the independent institutions at lower cost to the State than were those enrollment burdens to rest on the public institutions.

The first section of this chapter will discuss two general considerations in planning public assistance to independent higher education, and the second part will focus on criteria for choosing particular plans. The major part of the chapter constitutes an examination of approaches for stimulating enrollments. This section is divided into programs that subsidize the demand side of the market, those that subsidize the supply side, and those that represent a combination of demand and supply subsidies. Each program is described and analyzed in terms of enrollment goals. The final section of this chapter represents a brief discussion of research and evaluation needs for judging the success of subsidies as well as for determining which policies are most efficacious for a given cost.

TWO CONSIDERATIONS FOR POLICY MAKERS

In carrying out this study we have tacitly assumed that (1) the present policies on student charges in the public sector will not change; and (2) the issue of subsidizing California residents who attend colleges and universities in other states has not been raised. Yet, both of these assumptions should be questioned at this juncture in discussing policy formation. That is, there are political rumblings that tuition charges may be imposed on the public institutions in the near future, on the one hand; and there are valid reasons for considering subsidies for State residents who attend out-of-state institutions, on the other.

The best way of dealing with the first question is to ask what effect tuition increases in the public institutions would have on enrollments in the independent colleges and universities? Such increases in student charges in the public institutions would precipitate some shift in enrollments to the independent colleges and universities. The magnitude of the shift would be related directly to the size of the increase in charges. By increasing the costs to the student at the public colleges and universities, the price differential between public and independent institutions will narrow. Accordingly, the independent institutions will become relatively more attractive than they were before student charges at the public institutions were imposed. Yet, unless scholarships are given in the public institutions, the total number of students served by the State will be lower. That is, higher charges in the public sector will prevent some students from attending any institution.

In summary, tuition increases in the public institutions will engender increases in enrollments in the private sector by raising the demand for independent higher education (i.e., shifting the entire demand curve to the right). Yet, unless scholarships are provided to students with limited means, some students from low-income families will be prevented from attending the public four-year institutions. It is assumed here that tuition will not be imposed in the public junior colleges.

The second issue encompasses the advisability of giving scholarships or loans to California residents who attend institutions situated in other states. Certainly this policy would be consistent with one which would minimize the cost to the State for a given level of higher educational enrollments. Students who attend out-of-state institutions lift a potential burden from the public colleges and universities in the same manner as do students who enroll in independent institutions of higher education within the State.

Nor is it clear that the social benefits that accrue to the State of California when a State resident chooses an out-of-state institution rather than one of California's independent colleges or universities differ substantially. In every major respect the within-state or out-of-state distinction does not bear upon the quality of the educational experience, and the only "loss" to the State from exporting students is the income to State residents that within-state expenditures might provide.

On this basis we recommend that the State consider very seriously the possibility of utilizing scholarship and loan plans to assist California residents who choose to attend institutions in other states. Indeed, several states including New Jersey, New York, Pennsylvania, Vermont, Connecticut, and Massachusetts provide scholarships or loans to students that can be used at out-of-state institutions.

CRITERIA FOR CHOOSING ARRANGEMENTS

The choice of particular plans for State support of independent higher education is not a simple one. Not only are there a plethora of possibilities as evidenced in Chapter 3, but there are many political, educational, and administrative factors that must be considered as well as financial ones. Accordingly, the final choice of plans must be made on the basis of factors which are not all contained within the scope of this study. Nevertheless, it is useful to discuss important criteria for designing a course of action. In this section we delineate some of those guidelines and how they can be applied.

Providing Additional Enrollments in the Independent Institutions at Lower Cost to the State

The foremost goal of this study is to seek ways of stimulating enrollments in the private institutions at lower cost to the State than that which would be incurred for similar enrollment increases in the public colleges and universities. How can this cost criterion be implemented into the plan of assistance?

In general, the larger the subsidies to either the demand or the supply side of the independent higher education market, the greater will be the increase in independent higher educational enrollments. But, as the cost-per-enrollee of such subsidies rise, at some point they will equal and subsequently exceed the State's present contribution per enrollee at the public institutions. Therefore, the State might base its total support of independent higher education on the criterion that enrollments in the independent sector will be stimulated as long as the average cost of doing so does not exceed the State contribution for increasing enrollments at comparable public institutions.

The procedure for measuring such costs is not a difficult one for the simplest programs, where per-student subsidies are given directly to the institutions or to the students in the form of scholarships. The cost to the State of a loan program is also relatively easy to compute. In these cases one can just add the per-student subsidies on both sides of the market in order to derive the total per-student subsidy.

More complicated arrangements, however, mean greater problems in estimating the cost per enrollee to the State. For example, how should the cost of construction grants be allocated? The most reasonable method would be to estimate the enrollment increase that would result from construction of new facilities as well as assessing the useful life of such buildings and equipment. One could then distribute the cost of the grant over the additional students for the expected life of the asset. This procedure would obtain an estimated cost per additional enrollee. Yet, if scholarships were given in addition to subsidies that stimulate supply, these two would have to be added in order to obtain a total State cost-per-enrollee.

Avoiding the Savings Bank Phenomenon

A second problem in assessing costs is that which is implied by the savings bank phenomenon that was described in Chapter 2. Is the State's criterion on cost-per-student applicable only to additional enrollees in the independent colleges and universities, or is the State willing to support California residents who would have gone to the independent institutions in the absence of subsidies?

If the arrangements for stimulating new enrollments in the independent institutions were also applicable to the existing unsubsidized levels of enrollment in these colleges and universities, the cost to the State for expanding such enrollments would be enormous. For example, if the State gave a subsidy to either institutions or to students for every California resident who was attending an independent college and university--not just for additional enrollees beyond present levels--the cost to the State for each additional enrollee would be prohibitive.

The following example illustrates this phenomenon. Of the 100,000 or so students in California's independent colleges and universities, about 75 percent of them, 75,000, are California residents.[1] Assume that the State, wishing to spur enrollments at these institutions, gives a subsidy of $1,000 per California enrollee directly to the institutions or to the students in the form of scholarships. Further, assume that the enrollment increase in response to this subsidy is comprised of 10,000 additional California residents who will attend the independent institutions. The total cost to the State would be $1,000 annually for 85,000 students or $85,000,000 a year.

Now bear in mind that a per-student subsidy of $1,000 a year is considerably less than the State's contribution for each student at the State Colleges and the University of California where recent estimates of the State's burden are $1,263 for the former and almost $1,800 for the latter.[2] Yet, the fact that all California residents in the independent institutions would be eligible for per-student subsidies means that the vast majority of students receiving such subsidies would not represent additional enrollments. If we divide the estimated total of $85,000,000 in costs for the $1,000 subsidy by the assumed increase in enrollments of 10,000 students at the independent institutions, the State's cost per additional enrollee is about $8,500 a year. This represents a cost-per-student that is seven times the estimated State contribution per student at the California State Colleges and five times that at the University of California. Even if enrollments of California residents at independent colleges and universities were to double as a result of a $1,000 subsidy, the cost per additional enrollee would still be $2,000.

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[1] See Table 4.8 in Chapter 4.

[2] See The Challenge of Achievement, p. 51.

To keep the cost for additional enrollments within the bounds of the State's contribution per student at the public institutions means that only those programs that reward additional enrollments would be within a cost-feasible range. For example, rather than paying subsidies to institutions for all California residents in attendance, the State might pay only for increases in enrollments beyond the present levels. In each of the approaches discussed below we must be cognizant of the additional costs which are attributable to subsidizing existing levels of enrollment. The actual choice of plans must take into account this phenomenon.

Other Criteria

There are at least five other guidelines that should be considered when drafting State financial arrangements for increasing enrollments at the independent colleges and universitiies. These factors are (1) the administrative costs; (2) the simplicity of implementation and maintenance; (3) the distribution of benefits; (4) the responsiveness of arrangements to selective enrollment needs; and (5) the effect of arrangements on funding from other sources.

1. Administrative Costs

Aside from the direct costs of the subsidies there are indirect costs to the State of administering programs. These costs are incurred not only by the State, but also by participating institutions and students. The magnitude of administrative costs associated with each strategy should be considered in weighing alternative plans. Programs that have exceedingly high administrative costs relative to payoffs should be avoided, other things being held constant.

In particular, those programs that require heavy auditing costs on the part of states and institutions are less desirable than those that circumvent intensive auditing procedures. Indeed, institutions may be reluctant to participate if internal financial procedures are made more cumbersome in order to meet State requirements.

2. Simplicity of Implementation and Maintenance

Consistent with the goal of limiting administrative costs is the criterion of simplicity in the mechanics of the arrangement. In this respect the best programs are those which disturb least the existing arrangements and procedures for operating California's independent colleges and universities, and which can rely on presently existing governmental agencies for implementation. Further, the less complex the eligibility requirements for subsidies, the compliance requirements, and the actual mechanics of the program, the less likely that there will be confusion and inefficiency in program administration. The State's arrangements should be easily understandable and feasible for all potential participants.

3. Distribution of Benefits

Close scrutiny should be given to the distribution of benefits among the population that accrue to any State plan of assistance to independent higher education. As we pointed out in Chapter 1, the present State system of higher education tends "...to promote greater rather than less inequality among people of various social and economic backgrounds by making available substantial subsidies that lower income families are either not eligible for or cannot make use of because of other conditions and constraints associated with their income position."3/ If subsidies to independent higher education represent assistance to students from families with even higher income than their counterparts in the public institutions, this anti-egalitarian effect will be reinforced with a vengeance.

Each type of subsidy should be examined in the light of its effect on the distribution of higher educational benefits among different groups. Efforts should be made to maximize the educational opportunities of students from lower income families. Scholarships for students at the independent institutions, for example, should be directly related to financial need rather than being a flat grant to each student regardless of his background. Bonuses might be paid to institutions for enrolling students who are drawn from underprivileged circumstances. Present loan markets make it relatively easy for the children of wealthy families to borrow funds, but very difficult for children of the poor.4/ State loan plans should be designed to circumvent these inequities.

3/ W. Lee Hansen and Burton A. Weisbrod, Benefits, Costs, and Finance of Public Higher Education (Chicago: Markham Publishing Co., 1969).

4/ See Karl Shell, F. M. Fisher, D. K. Foley, and Ann Friedlander, "The Educational Opportunity Bank," National Tax Journal, Vol. XXI (March 1968), p. 8.

4. Responsiveness to Selective Enrollment Needs

The State should consider a plan that is flexible enough to fit selective enrollment needs when they arise. For example, in a given year there may be more junior college transferees than there are third year openings in the public colleges in some regions of the State. In those cases the State should be in a position to fully subsidize at local independent institutions, those students who were unable to obtain places at the public four-year colleges for lack of space. That is, the State should have the option of contracting with independent institutions to fill public needs on a contingency basis.

Moreover, there may be particular curricula or programs which the independent institutions can provide in cooperation with the public ones. In those cases the State should have the ability to make the necessary cooperative arrangements. Finally, there may be large unfilled social needs for persons with specialized training that can be filled most quickly by subsidizing the expansion of such training at the independent institutions. For example, it may be far more efficient to provide State support to independent institutions for increasing the supply of medical, paramedical, dental, and other health professionals than to create new public institutions. Any plan for subsidizing independent higher education should leave room for this sort of option.

5. Effect on Traditional Sources of Support

Finally, the State should consider the impact of any set of arrangements on the productivity of traditional sources of support. As public support to independent higher education increases, there is a tendency for some private support to withdraw. For example, many business firms are reluctant to contribute directly to publicly supported institutions on the rationale that through the State tax system they are already supporting such colleges and universities. There is also a danger that alumni will justify withdrawal of their support on the basis of the State's newly assumed role. Indeed, the independent institutions themselves may reduce the zealousness of their own fund-raising efforts if they find that they can rely increasingly upon public funds.

One of the foremost experts on financing higher education has stated emphatically that governments "...should not attempt to replace present sources of income to the institutions."5/ Indeed, "...the

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5/ See Howard R. Bowen, The Finance of Higher Education, Carnegie Commission on Higher Education (Berkeley, California: Carnegie Commission, 1968), p. 18. While Bowen refers here to the role of the Federal government only, he has expressed in correspondence that we must be generally wary of government funds serving as a replacement for private support. Letter to Willard Spalding from Howard R. Bowen, November 10, 1969.

system should, if possible, encourage existing sources to increase their efforts."6/ Bowen has suggested in conversation that the State might consider providing some aid to the institutions in the form of matching grants that are directly related to the level of funds received from private sources. In this way, the institutions would have incentives to exploit all existing sources of support rather than relinquishing them. One difficulty with this particular plan is that it would help most those institutions with the greatest fund-raising capabilities enabling the rich institutions to get richer, while penalizing the lesser-established colleges and universities. Yet, some modified version of this plan might be feasible, and in the broader sense we must consider the implications of State arrangements on the provision of funds from other sources.

ALTERNATIVE PLANS

In this section we discuss alternative plans that the State might adopt for supporting independent higher education in California. Each plan is discussed within the context of a market analysis on the effect of subsidies on enrollments in the independent colleges and universities. The purpose of this presentation and discussion is to evaluate broad categories of programs rather than outlining the fine details of every possible variation of all possible arrangements. For example, we do not recommend a specific rate of interest for a loan program, but rather we consider the broader question of whether the rate should be set at or below the free market rate. For specific applications of each plan the reader should examine the relevant programs of other states as referenced in Chapter 3. While the discussion of each plan is fairly extensive, we have attempted to cite additional sources for more detailed analyses.

Table 5.1 shows the alternative programs for subsidizing independent higher education that are reviewed below. The presentation is consistent with the general framework of analysis in that programs for stimulating enrollments via subsidies to demand are examined separately from those that provide subsidies to the supply side of the market. Combined demand and supply-oriented programs are also discussed.

TABLE 5.1

ALTERNATIVE PROGRAMS FOR SUBSIDIZING INDEPENDENT HIGHER EDUCATION

I. Stimulating Enrollments Through Demand-Oriented Programs

  A. Scholarships
  B. Student Loans
  C. Tax Benefits to Student Families

6/ Ibid.

TABLE 5.1 (Cont.)

II. Stimulating Enrollments Through Supply-Oriented Programs

  A. Direct Grants to Institutions

    1. Student Based Institutional Grants
    2. Facilities (Capital) Construction Grants

  B. Loans to Institutions

    1. State Subsidized Loans to Private Institutions of Higher Education
    2. State-wide Facilities Financing Authority for Private Institutions of Higher Education

III. Combined Demand- and Supply-Oriented Programs

STIMULATING ENROLLMENTS THROUGH DEMAND-ORIENTED PROGRAMS

There are three basic approaches for stimulating enrollments in independent higher education through demand-oriented programs: scholarships, student loans, and tax benefits to students' families.

A - SCHOLARSHIPS

Scholarships represent the most common form of subsidy on the demand side of the higher educational market. At least 23 states had scholarship programs in 1968. The following scholarship program can be considered to be a general one that is consistent with the enrollment goals of the State of California.

Brief Description

Scholarships would be awarded to California resident students attending California's independent colleges and universities. These entitlements would be based upon the following suggested criteria:

(1) Scholarship aid is to be granted to students who are academically qualified. That is, a student is awarded a scholarship conditioned upon the student's being accepted by an accredited California institution of private higher education. No other restrictions are to be applied to the institution to which the scholarship may be applied. Institutions are free to apply their own criteria for admissions. This may include a review based upon the student's past performance and/or his potential for college level work.

(2) The total amount of the scholarship shall in no case exceed the State's share of educating a student in a comparable institution within the State system of higher education. That is, the

maximum scholarship award will be determined by the average State contribution for educating a student in either the California State Colleges or the University of California (whichever is deemed comparable), and not the cost at the particular private institution the student plans to enroll in.

(3) The amount of aid granted will decline as the ability of the student's family to support his educational expenses increases.

(4) Students enrolled less than full-time will also be eligible for aid; but, the aid received shall be pro-rated according to the proportion of a full course-load (15 semester units or equivalent for undergraduates) that the enrollee undertakes.

Explanation and Analysis of a Scholarship Program

A scholarship program would make it financially possible for California resident students to choose among both public institutions which are already subsidized and the independent institutions of higher education. This would tend to increase the relative demand for enrollments at the independent colleges and universities. Unfortunately, the straightforward scholarship approach falls prey to the high cost of the "savings bank phenomenon."

That is, the high cost of establishing a program of general scholarships to all resident students has been emphasized above and in Chapter 2. Not only would students who enroll in independent institutions as a direct result of the scholarships be aided, but all resident enrollees would be eligible. Since about three-fourths of the present private college and university enrollees are State residents, the bulk of the aid funds would be spent on subsidizing students who would have attended anyway. In addition, high income families may use the scholarships to replace expenditures on higher education that would have been made out of their own funds, enabling them to use those freed funds to purchase other goods and services. In such a case more education is not purchased as a result of the subsidy; rather its effect will be to increase the "real" income of the rich.[7]

One way to circumvent both of these shortcomings is to link the scholarship level to the financial status of the student's family. This will reduce the high cost of the savings bank phenomenon because many of the students who would select the independent institutions even in the absence of a subsidy are drawn from families who can clearly afford such expenditures. It also overcomes the anomaly of providing public assistance for students from upper-income groups. That is, if upper-income students did receive substantial assistance, we would be using monies raised by an essentially regressive and proportional tax structure to transfer more resources to the rich.[8] This effect would be particularly pronounced the higher the average income level of the families from which students in the independent institutions are drawn.

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[7] See Roger Bolton, The Financing of Higher Education, The Brookings Institution (unpublished preliminary manuscript, 1967), Chapter 4, pp. 28-29.

Indeed, the linking of scholarships to family financial ability is likely to make each dollar of subsidy more effective for increasing enrollments, in quite another way. The reasoning is consistent with the analysis above. That is, a relatively high proportion of students from upper-income families are already attending independent institutions of higher education relative to students from more modest backgrounds. Therefore, it is not as likely that the enrollment response to scholarship aid of upper-income students will be as great as that of middle and lower-income ones who have been prevented financially from attending such institutions.

At the very least one would expect that the price elasticity of enrollment demands--a useful measure of such responsiveness--to be greater among students drawn from lower-income families.[9] Indeed, a recent study on the Private Demand for Higher Education in California found that such an effect was substantiated even for the public institutions.[10] It was found that the elasticity of demand "...varies from -1.12 for the lowest income bracket [$0,000 - $7,599 in 1967-68] to -.71 for the highest [$19,500 and over]."[11] In other words, a decline of one percent in the cost or price to a student in the lowest income range seemed to engender a rise of over one percent in student enrollments from this group. On the other hand, a similar decline in price was associated with an enrollment increase that was only about seven-tenths of one percent among the highest income group.[12]

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[8] See W. L. Hansen and B. A. Weisbrod, op. cit.

[9] For a definition of price elasticity of demand, see Chapter 2.

[10] Stephen A. Hoenack, op. cit., Chapter 4.

[11] Ibid., p. 52. See also Tables 1-6.

[12] These figures are for purposes of illustration only since they were estimated among a population of students attending public institutions and since any such figures are subject to a number of estimation errors. Moreover, the actual increase in enrollments from each income group depends not only on the elasticity of demand of that group but also on the total enrollment size of the group.

Thus, the policy of linking scholarship aid to the financial need of students appears to have three advantages. First, it reduces the high cost of the savings bank phenomenon; that which is attributable to subsidizing students who would have attended the independent colleges and universities in the absence of subsidies. Second, it is likely to have a more egalitarian distribution of benefits than an equal scholarship for all students. Finally, this policy would concentrate funds among students who would appear to be more responsive to subsidies, potentially increasing the cost-effectiveness of such grants.

Maximum Amount of Scholarship Award

Since the objective of this study was to seek ways of using public funds to stimulate increases in enrollments at independent colleges and universities at less cost per enrollee than that incurred in public institutions, we suggest that the maximum award be no greater than the average State contribution per enrollee in the comparable group of public institutions.[13] Thus, while the maximum scholarship under this proposal is the State share per enrollee in the system of public higher education, the amount received varies with the ability of the student's family to pay for his education. The detailed operation of the scheme is presented below.

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[13] It is recognized that institutions differ in quality. Thus, a student attending one of the prestigious private colleges may perhaps receive education of a higher quality than that which is available at either the California State Colleges or the University of California. It might be argued that the cost used should be the cost of providing an equal "quality" level in the public institutions, and not the cost of the present "quality" level. However, our scheme sets the "quality" in the State College system or University as its maximum. If students wish to receive a higher "quality" of education, they may do so, but their taste for high quality is to be paid by themselves and not the State. The program allows for choice in the quality picked, but does not subsidize those wishing to opt for a higher quality than that offered at the State institutions. A loan program could be used jointly with the present proposal to make it easier for students to trade upwards in terms of quality. For a similar view see Howard Bowen, op. cit., pp. 9-13.

If we let

C_s = the average State contribution per enrollee in the comparable State institutions

Y = family income adjusted for family size and other characteristics

A = scholarship received

then, the amount of the scholarship granted would be given by:

$$A = C_s - k\,Y$$

Where: k indicates how rapidly the scholarship received declines with income.

An alternative procedure is to determine, as under the present California aid system, what a reasonable family contribution would be.[14] The amount of aid received would then be the difference between the average State contribution in the public institutions and the estimate of the "reasonable contribution." In both cases, as income or the "ability to pay" increases the amount of the scholarship declines so that no scholarship aid is received beyond a certain income figure. This seems preferable to those schemes which would give a fixed amount per student below a certain family income and none to those above that figure since the reduction in scholarship aid would be gradual. Besides avoiding the disincentive to earn or report income above the cut-off point for families with college students, it avoids the very obviously inequitable treatment between those families just above the cut-off point and those just below it.

Summary of Scholarship Program

In terms of cost-effectiveness, the program outlined above assures a greater enrollment response per dollar of program cost than a completely general scholarship program. The amount of funds received by students who would not attend in the absence of a grant is likely to be far greater under this program than under a general scholarship program.

Moreover, a program of scholarship aid minimizes many of the problems inherent in direct institutional aid. Among these difficulties are the requirements for State audits of private institutions and the problems inherent in coping with the politically difficult issue of aiding church-related institutions.

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[14] This is similar to the proposal by Howard R. Bowen, Ibid., p. 9.

The application of this program has been restricted to those students attending in-state institutions. Yet, if the basic reason for offering aid is to take the enrollment pressure off the public institutions, no distinction should be made between providing funds for California residents who attend institutions in California or those who attend colleges and universities that are situated in other states. In effect, the present program discriminates against those California residents with a preference for attending an out-of-state institution either public or private.

Present California Scholarship Program

At present, the State finances and administers two scholarship programs for California resident students attending either public or private in-state institutions of higher education: (1) the State Scholarship Program and (2) the Graduate Fellowship Program. Both programs are administered by the State Scholarship and Loan Commission. Since our principal concern is with expanding undergraduate enrollments, this discussion is restricted to the State Scholarship Program.

The State Scholarship Program is a "traditional scholarship program for students of the highest academic standing (as conventionally measured). It is based on the concept of student aid as a reward for academic achievement and promise."15/ Applicants are ranked according to their scores on the Scholastic Aptitude Test (SAT) and are screened for financial need. The College Scholarship Service standards (with certain departures) are used for determining need.

In 1968-69, State Scholarships ranged "from $300 to $900 plus 90 percent up to a maximum of $1,500 per academic year."16/ That is, the level of scholarship aid is geared not only to financial need, but to the tuition and fees charged by the particular institution the recipient will be attending.

Presently, new scholarships are awarded "to the equivalent of 2 percent of the number of high school graduates of the preceeding year."17/ Under present policies it is estimated that in five years about 10 percent of first-time freshmen at four-year institutions will be awarded scholarships.

15/ The Challenge of Achievement, p. 68.

16/ Ibid.

17/ Ibid.

It is asserted in The Challenge of Achievement that : "It is ...questionable whether further expansion of the existing State Scholarship Program in its present form would be of any significant benefit to the private institutions."[18] However, the report contains a number of misconceptions concerning the nature of scholarship programs. First, the report states that, "Although the scholarship program does not give the private institutions funds beyond what they might otherwise raise from tuition and fees, it does offset what they would have to provide in financial aid themselves to these students, and it permits them to use that money for other students on other programs, as they see fit."[19] The important point is, that the existence of the State Scholarship Program has increased the demand for the institutions' services and brought in additional funds. It is not necessarily true that in the absence of the scholarship program the institutions would themselves have been able to raise their funds through tuition and fees. The report seems to assume that the same number of students would be attending whether or not scholarships are available. This ignores the impact which scholarships have on increasing demand and on the subsequent increase in enrollments.

A second point made in The Challenge of Achievement is that "the percentage of students [scholarship recipients] enrolling in private institutions has declined from 68 percent to 55 percent and may be expected to continue to decline in the near future."[20] The fact that the proportion of recipients has declined over time does not indicate that further expansion would not help private institutions. As was pointed out in Chapter 4, the overall number of California students enrolling at the public institutions has grown at twice the rate of enrollment growth at the independent institutions. Moreover, the proposed scholarship program would apply only to students enrolling at the independent institutions.

In summary the present State scholarship program is far more modest in scope and considerably different in its provisions from the one proposed above. We find that the particular criticisms of the scholarship approach stated in The Challenge of Achievement are based upon misunderstandings of the program's characteristics rather than upon rigorous analysis.

B - STUDENT LOANS

Student loan programs are becoming increasingly common among the other states. Two types of state loan programs are considered

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18/ Ibid., p. 100.

19/ Ibid.

20/ Ibid.

here: state-subsidized loans and state-guaranteed loans. Both of these would increase student demand for higher education by reducing the cost of borrowing and by guaranteeing access to funds for purposes of attending colleges and universities.

Description of State Subsidized Student Loans

This program would provide loans to California resident students attending California institutions of higher education. The loans would be granted at interest rates below the market level with the State paying the differential between the market rate and the loan rate to the lending institutions. The following criteria for such loans are suggested:

(1) Any California resident who is presently enrolled or enrolling in either California public or private institutions of higher education is eligible.

(2) A ceiling would be placed on the annual amount which each student may borrow as well as on the total amount that he may borrow. This restriction is required in order to discourage students from borrowing low interest funds for purposes other than higher education.

(3) No means test is applied to determine the level of funds a student may borrow.

(4) Part-time students would also be eligible for aid. The amount received by a part-time student would be pro-rated according to the portion of a full-time course-load that the student undertakes (15 semester units or equivalent for undergraduates).

Description of State Guaranteed Student Loans

This program would enable California resident students attending California institutions of higher education to obtain loans through approved banking channels whose repayment would be guaranteed by the State. The State guarantee would reduce the lender's risk reducing the cost of the loan to the student. The criteria for the State guaranteed student loans would be identical to those for the subsidized loans with the additional stipulation that the State would have to endorse the loan and would stipulate a maximum interest rate chargeable under the program.

General Description of Both Types of Loans

The purpose of both types of loan programs would be to increase the demand for enrollments at independent institutions of higher education as well as to increase the general demand for higher education at low cost to the State. That is, loans would enable students to enroll at any California institution who might otherwise lack the financial resources required for living expenses and other needs associated with college attendance. Thus, a State subsidized or guaranteed loan program would have particular advantages for students drawn from lower-income families. Because the cost of loans is considerably lower than the cost of scholarships, the savings bank paradox is probably not important. That is, if the State is willing to subsidize half of the interest cost of a loan, and the interest rate is 10 percent, then the cost to the State is only about 5 percent per year of an equivalent amount of scholarship aid. Using this example, a loan of $1,000 would cost the State only $50 per year compared to the full $1,000 and full interest foregone of $100 per year implied by a scholarship program. Loan programs are relatively inexpensive to the State.

Explanation and Analysis of Loan Program

The actual costs and effects of loan programs depend crucially on a fairly extensive set of criteria. Some of these considerations are rather complex, although once the program is constructed it is a rather simple one to maintain. Fortunately, the architects of student loan programs have at their disposal a substantial number of recently published materials that describe the provisions of various loan alternatives.21/

While these plans have generally been drafted for the Federal government, some have wide applicability to the states. The programs discussed in this literature generally fall into one of three categories: (1) government guaranteed loans, without interest subsidy, (2) government subsidized loans, and (3) the Educational Opportunity Bank with payment based on income rather than on a fixed annual repayment.

21/ See for example, Educational Opportunity Bank: A Report of the Panel on Educational Innovation, Washington, D.C.: U.S. Government Printing Office, August, 1967 (J. R. Zacharias, Chairman). Karl Shell, F. M. Fisher, D. K. Foley, and Ann F. Friedlander, "The Educational Opportunity Bank: An Economic Analysis of a Contingent Repayment Loan Program for Higher Education," The National Tax Journal, Vol. XXI (March 1968) pp. 2-45; R. Hartman, Public Policy for Higher Education Student Loans, Preliminary Manuscript, Brookings Institution (October 1969); Ronald A. Wolk, Alternative Methods of Federal Funding for Higher Education, Berkeley, California: The Carnegie Commission, 1968; and Howard R. Bowen, The Finance of Higher Education, op. cit., Chapter 1.

All options open to the Federal government, however, are not open to the State. As a consequence, a number of programs which might be feasible at the Federal level are not as well-suited for the State level. For example, the Educational Opportunity Bank program as proposed requires a loan repayment based on the yearly income of the borrower. Since the Federal government can tax one's income regardless of the state of residency, this program is feasible. However, at the State level, problems would arise if former students changed their state of residence. The State of California could probably not audit the incomes of former resident-students who move out-of-state. As a consequence of this obvious restriction on State authority, such repayment proposals which are based on future income earned are not considered. The following discussion is restricted to programs where the level of repayment is generally independent of income earned during the repayment period.

Insofar as the economic impact of subsidized loans on enrollments in private higher education is concerned, the results will be similar to those of a student subsidy. That is, the availability of low interest educational loan funds will serve to increase the demand for private higher education and consequently increase enrollments.22/

Rates of Interest, Length of Repayment Period, and Debt Burden

In determining what specific loan program to institute, it is necessary to consider what would be a "reasonable debt burden" for a college graduate to bear. One solution to insuring a reasonable burden would be to base the repayment levels on the yearly income of the borrower during the repayment period. However, as argued above, states are unable to tax the incomes of residents of other states. Thus, such a program is feasible administratively only at the Federal level.

It is true that some persons would consider any debt burden to be excessive if it is to be borne by an individual just starting employment. However, this view is countered by the fact that many young families undertake debt for consumer durables such as automobiles, and it is hard to argue that education is less worthy of debt burden than such consumer goods.23/ It would seem that any meaningful

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22/ For example, with reference to Figure 2.2, the demand schedule will shift upwards to the right as a result of a loan program. If the per student loan (L) is equal to the hypothetical scholarship (A), the shift will be less than the amount L = A. This will be so since the price reduction is not equal to L dollars, since the loan must be paid off eventually.

23/ R. Hartman, Section II, p. 8.

criterion for judging whether repayment involves an excessive burden would be to view the annual repayment sum as a proportion of future annual income.[24]

One feasible solution is to consider that a "reasonable" repayment burden at a given level of income would be low enough so that other customary needs are met. For example, one might examine the average household expenditure patterns based on a given level of income and determine what fraction would ordinarily be available to repay the educational loan.

Although there is no general agreement as to what burden would be excessive, several suggestions have been made. One analyst "...has suggested that 7.5 percent of disposable income represents a socially acceptable ceiling."[25] He reasons that families spend 90 percent of disposable income on customary needs leaving 10 percent for "discretionary purposes." Since it is not reasonable to tap all of this residual for loan repayment, he would allocate three-fourths of discretionary income for this purpose.[26]

An alternative considered by Hartman is to develop a burden ceiling using Bureau of Labor Statistics data on consumption patterns and assuming a $9,000 yearly family income. Using Bureau of Labor Statistics estimated budgets for urban families of four persons at the "moderate standard of living" during the repayment period, he finds that for a $9,000 income family there would be a surplus of "from 2.0 to 5.7 percent of the young college graduate's family budget."[27] This sum could then be used for purchasing goods and services not included in the standard budget or for repayment of debt. This analysis clearly places a lower ceiling on what level of burden is considered excessive.

It is not within the purview of the present study to establish a fixed criterion for what constitutes an excessively high repayment burden. Rather, the figures above are presented to indicate what levels of burden have been considered as being upper limits. The variation from 2.0 percent (Hartman's lower figure) to the 7.5 percent suggested by Danière represent what might be considered a reasonable range. As the ratio of debt repayment to income approaches

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[24] Ibid.

[25] Ibid., p. 10. This is a citation to the work of Andre Danière.

[26] Ibid., p. 13.

[27] Ibid., p. 15.

7.5 percent, increasing numbers of observers would consider it to be excessive. On the other hand, two percent would probably not be considered an excessive burden by most.

The burden is usually measured by the amount of annual loan repayment as a proportion of future annual income. This burden varies with (1) the amount of debt accumulated during schooling, (2) the interest rate charged, and (3) the length of the repayment period. Various combinations of maximum debt obligations, interest rates, and repayment periods may be used to arrive at burden levels which would not be considered excessive.

Table 5.2 illustrates the annual burden as a percent of income (assumed to be $9,000) for a $3,000 and a $9,000 loan for interest rates of 3 percent, 7 percent and 10 percent, while the repayment period varies between 10 and 20 years. From an examination of this table it appears that the burden for a $3,000 loan is generally not excessive.

TABLE 5.2

ANNUAL DEBT REPAYMENT BURDEN AS A PERCENT OF A $9,000 INCOME FOR A $3,000 LOAN AND FOR A $9,000 LOAN

Annual Repayment of $3,000 Loan

	10-Year Repayment			20-Year Repayment		
	3%	7%	10%	3%	7%	10%
Dollars	351.69	427.14	488.25	201.66	283.17	352.38
Percent of Income	3.9	4.7	5.4	2.2	3.1	3.9

Income = $9,000 per year

SOURCE: R. Hartman, Public Policy For Higher Education, Student Loans, Table 2, p. 11.

Annual Repayment of $9,000 Loan

	10-Year Repayment			20-Year Repayment		
	3%	7%	10%	3%	7%	10%
Dollars	1,055.07	1,281.42	1,464.75	604.98	849.51	1,057.14
Percent of Income	11.7	14.2	16.3	6.7	9.4	11.7

Income = $9,000 per year

SOURCE: As above, Table 3, p. 12.

Even with only a 10-year repayment period and a rate of interest as high as 10 percent the burden of repayment amounts to 5.4 percent of an income of $9,000. At the other extreme, using only a 3 percent rate of interest and a 20-year repayment, the burden is but 2.2 percent of income. All of these combinations of repayment periods (10 or 20 years) and interest rates (3 percent, 7 percent and 10 percent) fall below the excessive burden standard prepared by Danière.

With reference to the $9,000 loan repayment programs illustrated in Table 5.2, only the 20-year, 3 percent interest rate combination (6.7 percent of income) falls within the Danière burden limit. While it may be argued that the Danière limit of 7.5 percent of disposable income is arbitrary, all but the 20-year, 3 percent interest rate program have burdens significantly above that figure.

Interest Rates

One way of assessing the subsidy that states might have to provide in order to keep rates of interest and debt burdens within reasonable limits is to determine the rate of interest that financial institutions might charge for State-guaranteed educational loans. While 7 percent was the rate most commonly charged in 1968-69 under the federally guaranteed loan program, there was difficulty in attracting lenders at this rate.28/ It appears, therefore, that if the State were to seek to attract educational loan funds for students in the private loan markets, the rate to be paid would be in excess of 7 percent, even when the loans are guaranteed.

On the other hand, the higher the interest rate, the greater will be the number of individuals who will feel a given loan repayment to be excessively burdensome. In order to encourage lenders to supply sufficient loanable funds, a rate in excess of 7 percent, perhaps of 10 percent is required; while in seeking to increase enrollments through loans, a lower rate might be required. In this case, guaranteed loans would still be too costly to increase enrollments substantially, and the State would have to subsidize the interest rate to achieve enrollment goals.

Restrictions on Guaranteed and Subsidized Loans

Since both guaranteed loans, without subsidy, and subsidized loans are available below the market rate for ordinary loans, there will be an incentive for students to borrow funds for non-educational purposes. In order to limit this type of borrowing, it will be necessary to impose a maximum on the amount of funds which may be

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28/ Ibid., p. 10.

borrowed each year. In addition it would seem preferable to place a limit on the total amount which could be borrowed, perhaps four times the yearly maximum, although this would be lengthened if the student undertakes post-graduate work.

Second, it would seem reasonable to limit the maximum yearly loan obtainable by part-time students to a figure commensurate with their course-loads. A reasonable approximation would be to reduce the maximum annual loan for a part-time student so that his maximum loan bears the same ratio to the full-time maximum as the student's part-time course-load bears to a full-time load of 15 semester units (or its equivalent) for undergraduates or 9 semester units (or its equivalent) for graduate students. For example, an undergraduate enrolled for 10 semester units would be able to receive a maximum yearly loan of two-thirds (10/15 = 2/3) of the maximum allowable for full-time students.

Although the annual cost requirements of a part-time student may be lower than those of a full-time student, the same will not be true for his total cost since the smaller annual cost is spread over a larger number of years. Thus, it would be desirable to apply the same overall maximum to both part-time and full-time students. For example, if a yearly maximum is put at $2,000 and a total maximum is set at $8,000, a student attending one-half time would be entitled to $1,000 each year up to a maximum of $8,000 over an 8-year period.

Forgiveness Provisions

A number of existing loan programs (for example, the Federal NDEA student loans) contain forgiveness provisions.[29] That is, upon meeting specified conditions, students are required to repay only part of the loan. There are a number of justifications for including such provisions. First, a forgiveness provision grants a subsidy to the student much as a subsidized rate of interest. However, rather than being general among all students, it provides a means of selectively encouraging particular actions or activities for which the State has a high priority. For example, the State has a vested interest in encouraging its college graduates to remain in the State. One means of encouraging those students who have received loans to remain in the State is to reduce the amount of the loan to be repaid for each year of State residency immediately following graduation.

Second, the State may have a shortage in certain occupational skills which are considered to have a high priority. As an example, the Federal NDEA loan program provided forgiveness for students who were employed as teachers upon graduation.30/

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[29] See Ronald A. Wolk, Alternative Methods of Federal Funding for Higher Education, op. cit.

Beginning Repayment

Since an important objective of a loan program is the easing of financial pressures of students in order to increase enrollments, it is desirable to arrange to postpone repayment until after the students have completed their education. One possibility is to compound the interest payments without requiring any repayment until after graduation, and to allow the student a reasonable time to begin gainful employment. It might be desirable to grant students a subsidy by waiving interest charges in the early years. That is, one possibility is to postpone not only the repayment period until a reasonable time after graduation but postpone the time when the interest begins to accrue.31/

Flexible Repayment Provisions

As discussed above, the annual repayment sum varies with the length of the repayment period, the amount borrowed and the rate of interest. The burden, in any meaningful sense, is considered as the percent of annual disposable income to be devoted to debt repayment. Incomes tend to move upward over time with variability above and below this upward trend. In addition, "necessary" consumption expenditures are subject to yearly variability. Thus, while it is desired that the loan be repaid within a reasonable period of time, it would also be desirable, from the point of view of individual flexibility and freedom, to provide some flexibility by permitting reduced payments in some years when income may be low or "necessary" expenditures high. The interest payments on this amount would be accrued so that increased amounts would be paid in later years. Similarly, repayment should be permitted prior to maturity and without penalty.32/

30/ *Ibid.*, p. 23. It should be noted that training in particular skills can be encouraged by giving loan preferences for selective fields. This, however, does not provide a strong inducement for students to remain in the occupational field for which he was trained or remain in the State.

31/ For example, under the Federal NDEA, interest does not begin to accrue until nine months after the student leaves the colleges. *Ibid.*, p. 23.

32/ See Howard R. Bowen, *The Finance of Higher Education*, *op. cit.*, pp. 10-11, Bowen's recommendations are for Federal programs, but this provision is equally applicable to the State level.

This provision would also make it possible to allow individual flexibility in changing jobs, undertaking additional education and training and pursuing other activities which may lead to temporarily reduced income (perhaps to engage in activities geared to increasing future income). Without loss to the State, it is possible to allow maximum individual discretion by incorporating loan repayment provisions which allow (1) reduced payments in some years to be made up by increased payments in later years and (2) payments in advance without penalty.

Means Test

It seems preferable that a means test not be applied to loan eligibility for a number of reasons. The scholarship program analyzed previously was such that it provided the same level of scholarship for each person of the same financial ability with decreasing amounts available for students from wealthier means. This program is rather rigid in its application, and does not consider differences in tastes and abilities among individuals. Some qualified students, for example, might wish to attend institutions of higher quality, ones which would involve higher costs than they could afford even with a scholarship. Loans would fill that gap. The existence of a loan program together with a scholarship program would permit just such flexibility. Moreover, some students from upperincome families may be in the rather unfortunate position of being ineligible for a scholarship while at the same time being unable to obtain funds from parents. Such a student would still be eligible for a loan. Thus, a combination scholarship-loan program would minimize this type of inequity.

Summary of Student Loans

In summary, student loans have the same effect on enrollments as scholarship aid. As in the case with scholarships, loans make their impact through increasing the level of student demand and subsequently increased levels of enrollment. Although the market analytics are the same, there are a number of additional considerations. First, loans require repayment which imposes a future burden on students dependent upon the amount of the loan, the interest rate charged and the length of the repayment period. The number of loans applied for by students will depend on the above conditions and on how they view their prospects for future income. Students entering occupations with high expected incomes will tend to borrow more heavily than those planning on occupations with relatively low incomes since the burden declines with increased income.

If loans are not subsidized or guaranteed, the loans will be paid for entirely by students with no cost to the State. If loans are guaranteed, the interest rates will be lower with the cost of repayment of defaulted loans paid by taxpayers--in all likelihood a small amount. Where loans are guaranteed and subsidized, the repayment of defaulted loans and the subsidy are paid by the taxpayers.

How much less expensive a loan program is to the State than a scholarship program will depend upon the number of defaults (probably low), the responsiveness of loan firms to interest rate changes, and how responsive students are to interest rate changes. Experience indicates that the level of loan subsidy need not be high in order to generate a large number of loan applications. Just making the capital markets open to students will lead to a large increase in loans. Accordingly some provision must be incorporated to insure that educational loans are used only for educational purposes.

C - TAX BENEFITS TO STUDENT FAMILIES

In this section we present a discussion of tax benefits to the families of students attending independent colleges and universities. It should be recognized that such programs can have but a limited impact on enrollments, but they are considered here for purposes of completeness.

Eligibility

It is suggested that eligibility for tax benefits under this program be governed by the same criteria governing the eligibility for classification as a tax exemption under the present California income tax laws.

Operation of Program

Tax relief could be provided families in either of two ways. First, all or a fixed proportion of the costs of tuition and fees charged by the independent institutions could be deducted from the State income tax base. This would serve to increase the after-tax income of State residents with students attending private colleges. However, the tax rates are low so that even a larger deduction would result in only a small reduction in State income taxes. Since the size of the tax benefit increases with income, such a program would be anti-egalitarian in terms of its impact on the distribution of income.

A second means of providing tax relief is to allow a tax credit for all or a part of tuition and fees paid to private colleges. This would tend, in most cases, to provide a larger measure of tax relief. Although each individual, regardless of income level, would receive the same tax credit for equal tuition and fee payments, such a program would also favor the upper income classes.

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Suppose, for example, that 50 percent of tuition and fees are allowed as credits against income tax and that these charges amount to $2,000. A family with a tax bill of $200 would only be able to charge $200 of the total credit of $1,000 (50 percent of $2,000) against its income; whereas families with tax bills of $1,000 and over would be able to use the entire credit.

Both possibilities, tax deductions and tax credits for tuition and fees are inequitable in their impact on income distribution. Moreover, by subsidizing most heavily the rich, they give relief to those families whose enrollment decisions are least sensitive to the cost of attending college. Therefore, tax subsidies are likely to act as a limited stimulant to enrollments, at best.

STIMULATING ENROLLMENTS THROUGH SUPPLY-ORIENTED PROGRAMS

Supply-oriented programs are those which give financial assistance to the institutions, directly. Two basic approaches are discussed: direct grants to institutions, and loans to institutions.

A - DIRECT GRANTS TO INSTITUTIONS

1. Student Based Grants to Private Institutions

Grants would be awarded to independent institutions of higher education on the basis of the number of additional California residents accepted beyond the base year enrollments. The purpose of the grant would be to stimulate the expansion of enrollments of State residents at independent institutions of higher education in California. The following criteria are suggested:

(1) All accredited independent institutions of higher education in California would be eligible to receive such grants.

(2) The amount of funds to be received would be based on the additional full-time equivalent (F.T.E.) California resident students enrolled beyond the base year.

(3) The amount of aid received by the institution per additional F.T.E. student would not exceed the State's contribution for educating a student in a comparable State institution.

(4) Provision should be made for moving forward the base year on which additional F.T.E. is computed after a reasonable period of institutional adjustment to higher enrollment levels, perhaps 10 years.

Explanation and Analysis of Grant Program

Grants awarded to private institutions of higher education will lead to increased levels of student enrollments by increasing the number of enrollment places offered by such institutions.[33] One possible approach discussed in Chapter 2 is the issuance of grants to private colleges and universities on the basis of the number of students enrolled. Such a program, while leading to increased enrollments will tend to be excessively costly for each additional enrollment gained. What is needed, then, is a means of granting aid to institutions, not for the total level of enrollments in a given year, but for the increase in enrollments above a base year (for example, the year in which the program is instituted). Thus, the amount of funding which the private institution receives would be based on its expansion and not on its present level of enrollments. Under this strategy there would be a clear incentive for institutions to admit additional students since, in effect, the cost of each additional enrollee would be reduced by the amount of the per-student institutional grant.

The Base Enrollment

In an ideal program funds would be granted only on the basis of the additional students admitted as a direct result of the grant program. Yet, most independent institutions in California have plans to expand enrollments in the absence of subsidies.[34] Theoretically, we would wish to separate out those normal enrollment increases that are not attributable to subsidies and reward institutions only for increases that are direct results of the enrollment incentives. In a practical sense, though it is not possible to partition enrollment increases into normal areas and grant-stimulated ones, so it is best to give grants for all enrollment increases at the independent institutions or else those that exceed some specified "expected" growth rate.[35]

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[33] See Chapter 2 for a detailed discussion of the mechanism through which per-student institutional grants lead to increased enrollments.

[34] See Table 4.8 in Chapter 4 for projected rates of undergraduate growth.

[35] Throughout this section our reference to enrollment increases tacitly assumes that grants will be given only for enrollment increases of California residents. There is some evidence that the independent colleges and universities in California wish to increase the proportion of out-of-state students attending their institutions. See Table 4.8, Chapter 4.

A Moving Enrollment Base

How would the plan work? In each year the independent institutions would receive a grant for all enrollments of California residents beyond those enrolled in the base year. For example, the base year would probably be the one in which the program was implemented. If N_1 students were enrolled in the base year, the grant would be based upon N_2 minus N_1, that is, the increase in enrollments. Grants to institutions in year 3 would be based upon enrollments N_3 minus N_1 and so on.

Yet, if grants were to be based, in perpetuity, on the additional enrollments beyond N_1, the program would become increasingly costly over time. Moreover, it is possible that as institutions reach their optimal sizes no expansion would take place; yet, since per-student subsidies would be determined by the difference between present enrollment levels and base year ones, the cost to the State would continue even after enrollments stabilized. In fact, over time there will be a tendency for the savings bank phenomenon to rear its costly head once again as funds are allocated on the basis of enrollments that do not respond to the grant.[36] Once this point is reached, it would be desirable to adjust the base year on which aid is computed. One means of doing this would be to move the base year ahead. For purposes of illustration, assume that it is decided to change the base after a 5-year period. Then, aid received in year 6 could be based on the difference in enrollments from year 2 to year 6; for year 7, on the difference between year 3 and year 7, and so on. If an institution fails to increase its enrollments beyond say the fifth year, so that enrollment in subsequent years is no larger than that in year 5, the total amount of subsidy received would gradually decline until in year 9 no aid would be received.[37]

The concept of a moving enrollment base for computing grants is also consistent with the financial strains of expansion. Initially, very high costs are incurred for expanding enrollments because of the necessary investment in capital construction and facilities. But ultimately, the impact of such expansionary costs decline. Of course, this problem also suggests the usefulness of capital construction grants and loans in any program to stimulate enrollments. To the degree that some support is needed by institutions to maintain increased enrollments, it might be advantageous to support all additional enrollments beyond N_1 at 50 percent of the original subsidy even after the institutions reach their optimal size. Some relatively simple provisions could compensate for the time pattern of enrollment expansions.

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[36] The only difference is that funds are not granted on the basis of all students, as in our discussion of the paradox in Chapter 2, but on all enrollments beyond N_1 (the base year enrollment).

[37] The enrollment base in year 9 is year 5. Since enrollments in year 9 equal that of year 5, with aid based on the difference, no aid is received.

Summary

The principal advantage of enrollment-based grants is their simplicity in administering and the large amount of flexibility that they offer to their recipients. Different independent institutions have different priorities in expanding, developing, and improving their programs. The enrollment grant allows maximum flexibility in utilizing State support.

2. Facilities Construction Grants

Brief Description

Facilities construction grants would be awarded to institutions of higher education for the construction of classrooms, laboratories, and ancillary facilities.

Eligibility and Restrictions

(1) All accredited independent institutions of higher education in California would be eligible.

(2) Funds allocated would be restricted to use in the construction of new facilities required for the expansion of enrollments.

(3) The State would undertake to pay a fixed proportion of the capital expansion costs.

Explanation and Analysis of Grant Program

An alternative to basing aid to private institutions of higher education on the number of students enrolled or on additional enrollments, is to induce expansion of the college by subsidizing part of the new construction. These funds would be used to expand the physical capacity of the institution in terms of increased classroom spaces, laboratory facilities, dormitories and other ancillary facilities. Such a program of subsidizing construction, would reduce the institutions' costs per student and consequently would increase the supply of educational services offered by the independent institutions.[38]

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[38] For a detailed discussion of the market analytics, see Chapter 2.

That is, the supply curve for the private institutions would be shifted downward to the right. Ideally, from the point of view of cost effectiveness, only those facilities being built as a result of the construction subsidy would be funded. As discussed above, the private institutions presently plan development on the existing financial assumptions. Thus, if the State were to subsidize all new construction, in order to encourage expansion, it would in part be subsidizing construction which had been planned in the absence of such a program. However, as in the case of student-based institutional grants, it is not possible to determine for individual institutions what part of construction is in excess of "normal" expansion.

Funding Basis

The provision of a matching grant is straightforward. The State would reimburse the independent institutions for a stipulated percentage of approved construction costs. The higher the proportion that the State would reimburse, the greater the impact of the program. Approved construction would be based upon the nature of the facilities and their role in enabling institutions to accept more students. For example, while classrooms, laboratories, and other instructional facilities would probably be approved ones, buildings whose functions are primarily recreational might not.

Given a limited appropriation, the program would need a criterion for allocating its budget. The major criterion that might be used is the potential contribution to institutional enrollments that the capital construction will make possible. Those projects which promise to increase enrollments substantially for any given cost should be preferred over those that promise more modest increases.

Special Purpose Construction Grants

Thus far our discussion has been concerned with general construction subsidies not restricted in purpose other than that of being tied to enrollment expansion. However, a number of programs may be considered to be of especially high priority to the State. As an example, the State may wish to increase the number of medical doctors, making expansion of medical facilities a prime target in construction. The State could encourage the construction of medical facilities even more than other general facilities through granting a larger subsidy for such construction projects. As an example, if the State is subsidizing say 20 percent of the costs of general construction, a 50 percent subsidy of medical facilities would tend to encourage greater expansion of medical facilities relative to other construction.

The advantage of subsidizing specific program construction as opposed to general construction is that the priorities of the State are enforced more directly. A possible difficulty with selective subsidies such as those discussed here is that the priorities of the individual institution may be altered. That is, the inducement to construct those facilities which are more highly subsidized may produce an "imbalance" in the overall program of the private institutions. For example, Federal funds which have been concentrated in the physical and biological sciences has been a source of concern. "University presidents have pointed with alarm to an academic imbalance in their institutions as the 'affluent hard sciences' overshadow the humanities and social sciences."39/ Diversity and autonomy are considered among the major qualities and advantages offered by the independent colleges and universities.40/ Any program of capital construction subsidies should avoid creating an "imbalance" in individual institutions while pursuing the goal of establishing a "balanced" state-wide program.

Geographic Considerations

Imbalances may exist not only in the provision of particular programs relative to need, but also in the geographic distribution of college services. As an alternative to building another State institution in such an area, or expanding existing institutions, consideration might be given to subsidizing construction of additional facilities at local private institutions of higher education.

In addition, the possibility exists of encouraging the establishment of new private colleges to meet these needs. Since the cost per student of a newly established college with limited enrollment will be high,41/ the State might consider subsidizing the initial construction of newer colleges at a higher level, than additional construction at established institutions. Particular attention might be focused on fostering independent institutions that enroll only upper-division students. It appears that increases in junior college enrollments have created shortages of places in the California State Colleges at the upper-division levels.

39/ Ronald Wolk, Alternative Methods of Federal Funding for Higher Education, op. cit., p. 13.

40/ Association of Independent California Colleges and Universities, "The Price of Independence," (Los Angeles: AICCU, 1969).

41/ There are certain economies which can be realized only with size.

LOANS TO PRIVATE INSTITUTIONS OF HIGHER EDUCATION

Much as student demand for enrollments may be stimulated through either scholarships or loans, the supply of enrollment positions provided by private institutions may be expanded by providing either grants or loans. The market analytics for loans follows that of grants very closely. That is, like grants to institutions, loans serve to increase the supply of enrollment positions and consequently the number of students who will be enrolled.

Both State guaranteed loans and State subsidized loans serve to lower the cost of borrowing funds and thus reduce the cost per student enrolled. Two proposals are considered in this section: (1) a program of State subsidized loans to private institutions, and (2) a program of centralized financing patterned after the Dormitory Authority of New York State.

1. State Subsidized Loans to Private Institutions of Higher Education

Brief Description

An alternative to subsidizing facilities expansion by directly assuming part of the construction cost is for the State to subsidize the rate of interest at which loans are made. Such programs are presently administered at the Federal level, for example, by the Departments of Health, Education and Welfare, and Housing and Urban Development.42/

Eligibility

Loans under this program would be generally available for the construction of new facilities by California's independent institutions of higher education, with the following conditions suggested for eligibility:

(1) All California independent institutions of higher education are to be eligible.

(2) No restriction shall be made as to the educational purpose as long as the facility for which the loan is requested is tied to expansion of enrollments.

42/ Ronald Wolk, Alternative Methods of Federal Funding for Higher Education, Appendix 4d., and pp. 14-22.

Explanation and Analysis of the Subsidized Loan Program

A program of State subsidized capital expansion loans could have much the same effect as a program where the State assumes part of the cost of new construction. That is, the effect is to make more funds available, and to lower the cost of construction, thus increasing the supply of educational services (enrollment positions). The market analysis of this is the same as that outlined for construction grants in Chapter 2, with the supply curve shifting downward to the right resulting in an increased number of student enrollments.

Special Purpose Construction Loans

The analysis underlying State subsidies for construction of special purpose facilities can be applied equally well to subsidized loans for special purposes. However, instead of subsidizing directly the cost of construction at higher rates for projects of high priority, the State might offer subsidized loans at differential rates. For example, if the construction of medical education facilities is of high priority, a longer repayment period as well as lower interest rates might be charged for such construction.

2. State-wide Facilities Financing Authority for Private Institutions of Higher Education

Brief Description

A number of states have established state-wide authorities to finance construction of classrooms, laboratories, administration buildings, libraries, dormitories and other ancillary facilities at private institutions of higher education. This proposal is based on the operation of the Dormitory Authority of the State of New York.43/

The state-wide authority would be empowered to float tax-free bonds, guaranteed payment of the loans, advertise bonds, coordinate construction activities with the private institutions and to make professional consultants available at low cost to the individual institutions.

Explanation and Analysis of Program

The Dormitory Authority of New York provides a central agency for issuing bonds, administering the overall loan program, and

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43/ For a description of the New York program see the CCHE Staff Report to the Council, December, 1969, Appendix D.

purchasing equipment. The advantages gained by establishing such an authority are (1) low average interest rates, (2) savings through quantity purchasing of equipment, and (3) flexibility in meeting the wide diversity of construction requirements among the various colleges.

Under the New York plan the property on which the facilities are constructed is deeded to the Authority, and reverts to the institution once its obligations to the Authority are discharged. The college leases the facility and property from the Authority, but maintains full administrative control.

In summary, a plan of this nature relies on the private loan markets, but is able to obtain long-term low-interest rates due to their tax free nature.

Costs of State Loan Programs

The cost of a State loan program will depend upon the scope or generality of the program and the degree to which loans are subsidized. A program of tax-free loans such as that patterned after the New York program will involve low costs to the State; while a general program of subsidized loans will, of course, involve increased costs as the size of the loan subsidy increases.

The ability of a state-wide authority to secure long-term low-interest loans makes it very attractive from the point of view of cost-effectiveness.

COMBINED DEMAND AND SUPPLY ORIENTED PROGRAMS

In the preceding sections, a number of alternative programs have been considered which lead to increased enrollments in private institutions of higher education by stimulating either the demand for enrollments or the supply of enrollment positions. It should be clear from the previous analyses that enrollments can be effectively increased by channeling subsidies either to the students or to the institutions themselves.

However, the decision as to what program is to be established need not be on an either-or basis. As we have seen in Chapter 2, a combination of supply-oriented and demand-oriented programs can be employed effectively to increase enrollments. Which programs might be used most effectively in combination will depend on the particular advantages of each program and how the programs might complement one another in fulfilling a specific priority. A number of examples are presented in the following section which illustrate how demand-oriented and supply-oriented programs might be effectively combined to produce the desired impact more efficiently than a program that concentrates its efforts on one side of the market.

Special Programs

Let us assume again that there is a particular area of specialization, say medicine, in which the State wishes to expand enrollments. An example of a complementary supply and demand oriented program would be as follows. First, the State wishing to ensure an increase in the number of available positions in private medical schools would increase the supply of such positions by subsidizing either through loans or grants the construction of medical facilities. This alone would reduce the costs of providing such educational services and would lead to some increase in enrollments. To ensure a sizeable enrollment increase, the State could simultaneously subsidize students who enter medical schools. This approach, then, would increase both the supply of enrollment positions and demand for enrollments, more directly assuring success in meeting the State's goal than by concentrating on one side of the market.

Cost Considerations

The increase in the costs of enrolling additional students may be quite high for institutions particularly in a relatively short time horizon. Where such increased costs exist, private institutions could be compensated by "cost-of-education supplements." The Carnegie Commission has recommended such supplements for institutions enrolling Federal grant holders. The amount of the supplements would be based on the number of State scholarship holders and on the level (lower division, upper division, or post-graduate) at which these students are enrolled.

Covering Administrative Costs

The establishment of a State scholarship or loan program may incur additional administrative costs for independent colleges and universities. Wherever this is the case, such cost increases should be identified and the institution compensated for the increased costs.

Summary

A number of illustrations have been given where it is desirable to aid both institutions and students simultaneously. To be sure, enrollment increases can be gained by concentrating on either student demand or institutional supply, but as indicated above advantages can be gained in a number of areas where combinations of plans are employed.

AGENDA FOR FUTURE RESEARCH

In order to more fully understand the operations of higher educational institutions and the enrollment behavior of students, there are many kinds of information that are needed. The provision of this information will require substantial research efforts by the State. Given the multi-billion dollar nature of California's higher educational system, such advances in knowledge are not luxuries, but necessities. The following are areas that require particular scrutiny.

In order to be able to predict with reasonable accuracy the effect of different State policies on enrollments, we need good estimates of the elasticity of both supply and demand. This will require the construction of econometric models of California's system of higher education and the implementation of these models with appropriate data.

Further, work needs to be carried out in defining and encouraging data comparability among institutions of higher education. Uniform accounting practices, a system of measuring capital consumption, and a logically consistent and accurate method of deriving standardized student units are absolute prerequisites to fulfilling comparability requirements.

Moreover, cost-effectiveness analyses of program can not be carried out properly without a systematic method of linking costs to programs and programs to performance. Progress in this area requires the implementation of a good planning-program-budgeting system (PPBS) for the institutions of higher education as well as a clearer statement of objectives.

With regard to filling these research needs the State of California stands at a crucial juncture. Changes in tuition in the public institutions and the adoption of subsidies to higher education represent ideal opportunities for evaluating the enrollment effects of the new policies. If proper data are collected and a competent evaluation is made, the results should be exceedingly useful for future policy prediction.

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